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**The Coming of Industry
to the South**

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THE ANNALS

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THE COMING OF INDUSTRY TO THE SOUTH

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FOREWORD

THE Coming of Industry to the South has been one of the important recent economic developments in the United States. To the South, whose economic life is predominantly agrarian, it has meant the development of industrial resources, expansion of old and the growth of new manufactures, and the emergence of a complacent and uncritical philosophy that accepts and promotes industrialism with but little recognition of its social consequences. It means also that many of the problems of social and economic adjustment and of instability that have characterized the transition from agriculture to industry elsewhere are arising in this region. To the United States as a whole it is significant partly because of the growth of certain industries in the South to positions of the first order, but particularly because it means that the section is being more closely integrated in the industrial life of the nation and that as this integration proceeds the "attitude of the South" toward national and international economic and political problems is changing.

This volume of *The Annals* is designed to show the scope of industrial development in the South and some of its consequences. It analyzes many of the problems that have arisen as industries have grown and as communities in the Southern states have changed from a predominantly agricultural to an agricultural and industrial society. It describes many adjustments that are under way and obstacles that limit their progress, and suggests steps necessary for the progressive adaptation of economic and social life to industrial changes in the future. It also indicates essential features of a program to restore and preserve agriculture and at the same time promote the development of industry in a balanced economy.

WILLIAM J. CARSON

Early Industrial Development in the South¹

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THE industrial development of the South has been so rapid in recent years as to attract the attention of the nation and to amaze the South itself—so much so that the region has become absorbed in industry, busy increasing it, defending it, and praising it. This preoccupation with its newly found economic savior and its newly developed problems is not surprising. The South has talked about and yearned for industrial greatness so long that the recent success has naturally made it self-conscious. For the industrial development of the South has been, in a measure, the result of conscious efforts of Southerners to build an industrial empire.

Time after time, prophets and enthusiasts have noted the natural resources of the region for industry and have called upon its citizens to develop them. Time after time, practical men of affairs have seen the economic, social, political, or military need for manufactures, and have added their words and their efforts to the movement. From early colonial days to the very present there has been a series of these deliberate efforts to develop industry. Some have been almost entirely fruitless. Others have made headway that has never been totally lost, but has formed a spiral slowly but surely rising—a snowball piling up in the last three decades at a vastly accelerating rate.

¹ This article is a summary of the author's volume, *The History of the Textile Industry in the South*, which is in preparation.

BRITISH COLONIAL POLICY

The American colonies had their beginning and growth during a period of world expansion, of vast enlargement of nations, of commerce, of industries, and of wants. Under the influence of the current economic theory of mercantilism, England, like all the other nations, wanted a gold cash balance of trade. To have this she needed colonies that furnished things she did not have, and that would take in payment for them the products of her rapidly growing industry. Nature, assisted by some instruction and persuasion and considerable restrictive legislation, made the colonies from Maryland southward fit into this scheme quite admirably. Little more than household manufactures for household use rose to disturb the British economy. After independence was gained, the agricultural economy was reinforced by the rise of cotton and slavery; and agricultural profits and psychology continued to accentuate what nature and British colonial policy had begun. It took the agricultural depression of the eighteen forties, almost disastrous to the older South, and the political, social, and economic revolution of the Civil War to bring about the state of mind and the economic conditions favorable to manufacturing—to bring about a situation where the conscious efforts to build industry could have a lasting and general effect.

The present article, though intro-

ductory to the subject of southern industrial development in general, will take its illustrations and its narrative largely from the development of the textile industry. It is the industry that has the longest and most conspicuous history in the South. It was the first to reach the stage of local custom work—the shop stage; the first to supply a local market by the use of machinery—the mill stage; the first to enter the national and international markets—the factory stage and the real entry into the industrial system. Finally, it is the industry upon which have been concentrated, both pro and con, the most frequent and spectacular expressions of southern industrial philosophy.

COLONIAL PERIOD

The policy of Crown, ministers, and Board of Trade regarding the colonies was consistent enough in theory, if it often, especially before 1760, failed in practice and in thoroughness of administration. The colonists were restrained by navigation laws, export duties, and taxes from selling raw and semiraw materials such as tobacco, naval stores, bar iron, and lumber to other than English markets, and were required to send them in British or colonial ships. They were encouraged to raise and manufacture silk and flax, because England had no great manufactures of these articles; and bar iron, because England's wood supply for furnaces was being exhausted. They were forbidden by a series of laws to manufacture iron and woolens, especially the latter, for this had long been the pet industry of Crown and Parliament and had become one of the mainstays of commercial England.

The policy of the promoting companies, and later of the governors, was not so simple, and not always easily reconcilable with that of the general government. The companies wanted an income from their investment, and

were interested in a degree of self-sufficiency in the colony that would obviate the necessity for aid in temporary depressions. They pointed out the advantages of the colonies for manufacture and invited artisans to immigrate—an invitation that was accepted. The governors were often torn between their duty to carry out the policy of the government and their real interest in and sympathy for the colonists. Therefore, some of them did not prevent colonial legislatures from passing laws encouraging manufactures, and they even encouraged such activities themselves.

The colonial governments were in no such anomalous position. They frankly wanted manufactures and frankly encouraged them as much as they were allowed to by England. Virginia in particular had a long and consistent policy of encouragement beginning in 1632 with a law forbidding artisans to plant tobacco and corn, because it was for the general good that they work at their trades. In 1646 the counties were authorized to set up flax houses and teach children the full linen trade. This authorization was extended in 1633 to "other useful occupations." In 1661 public tanneries with shoemakers, and in 1666 public looms with weavers, were required of each county. Spasmodically during the century, Virginia allowed bounties and premiums for various types of cloth manufactures, even including the forbidden woolens, as did the other colonies somewhat later. Spasmodically, also, the Southern colonies granted bounties for hemp, flax, naval stores, shipbuilding, salt, potash, and indigo, and laid export duties on materials needed in the colony, such as leather.

THE INDIVIDUAL COLONIST

The final party to this complex situation was the individual colonist,

who actually made such things as were made; and it must be confessed that he was affected less by laws and far-flung colonial policies than he was by geography and the state of trade. The climate and the soil were suited to tobacco and indigo and rice, and all these were wanted in Europe; the coastal plain was covered with forests yielding lumber and naval stores wanted in the expanding commerce of Europe; the many rivers led back into the land and provided an outlet and an inlet for the articles of international commerce.

Unlike the Northern colonist who wanted to raise wheat and wool and manufacture goods of all sorts, all of which competed with Englishmen in England, the Southerner found the system rather to his advantage. If he was rather limited to trading with England, England was on the boom as a trading and manufacturing country, and he was granted exclusive rights which counterbalanced the restrictions. He had no real temptation to go into manufacturing that would get him into trouble with the general policy, while the restrictions were not designed to prevent him from using the labor of his household to manufacture goods for household use, nor was it practicable to administer them so as to prevent local barter or even some intercolonial trade.

As early as 1649 there were plantations that were self-sufficient as regards textiles and leather articles; the Virginia bounty for cloth was claimed by many citizens and for considerable lengths of goods; and by the end of the century practically every family possessed the hand tools for making woolen and linen cloth.

During the next half-century these domestic manufactures spread with settlement into the back country of Virginia, North Carolina, and South

Carolina, increasing as they went, as settlement was removed from easy communication out for crops and in for European manufactures. During this half-century, cotton became more common as a textile fiber, and as it was more tractable than wool and easier to prepare than flax, it was more suited to household manufacture and its manufacture was virtually unopposed by England. During this half-century, also, the South received immigrants skilled in textiles—Irish, Scotch-Irish, and Germans. Travelers such as Burnaby in Virginia, Lawson and Brickell in North Carolina, Byrd in Virginia and North Carolina, and Oldmixon in South Carolina, all remark on the universality of homemade cloth and sometimes make a point of quantity, quality, and variety. During this half-century, finally, England began to tighten up on her colonial laws and administration, presaging the policy that brought on the Revolution.

HOUSEHOLD MANUFACTURE ENCOURAGED

It is impossible to know just how much goods were made at home, but all sorts of evidences are agreed on one thing, namely, that when crops failed or sold for low prices, the people turned readily to household manufactures. By 1660, for example, the concentration on tobacco raising had resulted in glutting the market, so that the people found it impossible to buy European goods and began to supply their own needs, those of cloth in particular, officially encouraged by the bounties, the public weavers, and the instruction to children already mentioned.

Another such depression, which began in 1693, was met by similar official and spontaneous action. About 1726 to 1731 the settlers in eastern North Carolina, unable to secure an outlet

for their tobacco, did the same. During the first half of the eighteenth century, governor after governor refers to temporary depressions in the market for tobacco, rice, or indigo as driving even planters used to importing rough English cloths for their slaves to set some of those slaves to spinning and weaving their own clothing.

This readiness with which necessity was met, this widespread skill in manufacturing, was put to good use in pre-Revolutionary and war days. There was much popular indignation against the Grenville ministry, the Townshend Acts, and the Stamp Acts of the 1760's and 1770's, and there arose a popular cry for manufacturing and economic self-sufficiency. Societies were organized to encourage spinning and weaving, and efforts were made to make homespun the fashionable and patriotic wear. Colonial governments of Virginia, North Carolina, South Carolina, and Georgia added official encouragement to the popular demand for manufactures by offering bounties for cloth. Some also offered bounties for salt, potash, and saltpeter. On the eve of the Revolution, counties and county committees of safety offered premiums for cloth, and a society in South Carolina set about raising funds to start factories.

SOURCES OF CLOTHING MATERIALS

Just before and during the Revolution there were some five sources of supply of goods for clothing besides that imported and smuggled in. Two—family manufacture for family use, and the employment by planters of their poorer neighbors to spin and weave in the latter's own homes—had been common for many years. During the fifteen years before the Revolution, the larger plantations, such as those of Washington, Robert Carter of Virginia, and Daniel Heyward of Charleston,

began to run weaving shops using free and slave labor to make goods for both their own plantations and those of their neighbors.

A fourth source of goods was the little manufactories, each serving a neighborhood and performing either all or part of the process, such as wool carding and fulling mills. Some did all the processes on a custom basis or bartered finished cloth for raw material. A fifth source was the upcountry. The emphasis upon grain and sheep raising in those sections left a greater margin of time for spinning and weaving; more raw material was available, and only the stimulus of a market was needed to create a surplus. Upland counties of Virginia in particular sent down wagon trains of goods to the low country. These last two sources of supply presaged in a fashion the fuller development of the uplands and of the little mills serving small localities.

The knowledge of the presence of iron ores in the South dates from Captain John Smith's time, and the manufacture of bar iron in small local furnaces from a time not much later. The fashioning of iron into farm tools by artisans and by slaves trained to blacksmithing was probably about as common as shop and custom weaving. Furnaces were most common in Virginia, and both this colony and North Carolina gave official aid to iron works and exempted workers from military service in the Revolution. Guns were made in all the colonies from New York to North Carolina.

EARLY NATIONAL PERIOD

With the reopening of trade and communication, the new American states took goods from Europe in great quantities, and domestic manufactures declined in favor of the imported goods. The too rapid expansion of trade precipitated a crisis and a depression,

and the new nation awoke to the fact that it must be economically as well as politically independent. In the parts of the country that had already developed considerable manufacturing, the result was a demand for protection; in the South, the result was an increase in household and neighborhood manufacturing.

The three decades following the close of the Revolution form the high-water mark of the domestic industry in the South. Hamilton in his report on manufactures in 1791 estimated that in some districts of the country, from two thirds to four fifths of all the clothing of the inhabitants was made at home; and Tench Coxe from a study of the records of that survey said that the middle and interior counties of Virginia and North Carolina and the interior counties of Georgia, South Carolina, and Maryland made at home articles of greater total value than they imported, approaching self-sufficiency in fabrics. Gallatin's report on manufactures in 1810 repeats this sort of estimate for the South.

MODIFYING FACTORS

During this period there appeared three far-reaching factors, two temporarily favorable to manufacturing in the South, and one permanently unfavorable.

The recognition, soon after the close of the Revolution, of the need for economic independence was reinforced during the next two decades by the reaction on the United States of the international situation. The wars of England with France and the Napoleonic wars, besides disturbing trade in general, took an especially troublesome turn in the form of paper battles which affected the United States more than they did the combatants. Our own retaliatory embargo and non-intercourse acts were considered by

many as merely an aggravation of a bad situation. The need and the conscious popular demand for manufactures rose again as vigorously as before the Revolution. Again societies were formed for the encouragement of domestic manufacturing and they offered prizes and sought to make homespun fashionable; Congress and states officially encouraged manufactures by tariff and lotteries and by urging members to wear homespun.

A second factor favorable to manufacturing was the introduction of machinery. The new textile inventions which England had tried so hard to keep for herself had come to the United States partly in the brain of Samuel Slater, partly smuggled in, and finally openly imported. From about 1790 to the close of the wars it looked as though the South might enter a manufacturing career. The growing household manufacturing, even as in New England, received the complement of wool carding and fulling mills and of cotton spinning mills.

Power spinning was carried on in South Carolina as early as 1788 at Charleston, in 1789 in Williamsburg District, and by 1790 at Statesburg. An effort was made, 1807 to 1810, to start an ambitious factory at Charleston. Petersburg, Virginia, began to build real cotton mills and became in a few years a considerable center. In 1812 the South Carolina legislature was asked to grant a loan to assist citizens in Greenville District in setting up a cotton factory, which apparently was built and was the forerunner of a considerable development in the interior in the next decade. The famous Schenck Mill at Lincolnton, North Carolina, was built in 1813, and about that time Governor Williams' cotton factory was established at Society Hill, South Carolina. There were ventures in the use of water power for

cotton spinning in Georgia about 1810 in Morgan, Oconee, and Wilkes Counties. Carding machines, fulling mills, and dyeing establishments serving neighborhoods were fairly common in the interior of South Carolina, North Carolina, and Tennessee.

The third factor which entered into the situation in this period, the one unfavorable to manufacturing, was the invention of the cotton gin. Its full significance was not known in 1793, nor yet in 1810; but its political and economic effects had begun to appear by the 1820's. By making cotton raising and slavery profitable it had given specialized farming a new lease on life and had kept the Southern states as predominantly agricultural as the Southern colonies had been—more so, for the small shop artisan and the household spinner and weaver in the South could no more hold their own before the onward sweep of the great staple and the great institution than they could in the rest of the world against the power machinery and the factory system.

THE AMERICAN SYSTEM

If the South, rich in products to sell and prosperous in an international situation favoring the selling, was magnanimous about the tariff of 1816, it began to see the divergence of its interests on this point from those of the North and the West in the depression in the 1820's, when the price of cotton fell gradually from about thirty cents in 1816-1818 to nine cents in 1827. The American System was not fulfilling the promise of its proponents, namely, that it would create American manufactures and markets sufficient to use American raw products. Cotton crops increased too fast for that. And so the South fought the tariff bills of 1828 and following in a growing spirit of resentment which approached nullifica-

tion. A few prophets of a different order urged the South to build manufactures and to use the tariff for its own benefit, even as the North was doing; they pointed out the need for economic independence, with New England substituted for England in arguments similar to those of the 1780's and the 1790's.

The legislatures of Virginia, North Carolina, South Carolina, Georgia, Tennessee, and Alabama took official action of one sort or another designed to increase manufactures, ranging from the old device of urging members to wear homespun to the granting of the advantages of limited liability to manufacturing companies. Most of these charters to cotton manufacturing companies authorized the holders to operate also sawmills, grist mills, iron working shops, and so on, and many of the mills then and for a generation afterward had such a combination of shops at their water power sites.

Virginia granted charters to seventeen cotton manufacturing companies between 1828 and 1832, and mills were built at Petersburg, Richmond, Martinsburg, and elsewhere. North Carolina incorporated five, four of which were in localities already familiar with cotton factories. In South Carolina Governor Williams had, by 1828, reopened on a larger scale his factory closed just after the War of 1812. The New Englanders who had migrated to Spartanburg and Greenville Districts in 1816-1818, when the depression in manufactures had closed the Rhode Island mills, were continually adding to their little ventures on the various streams capable of easy exploitation.

The famous mills of Vaucluse and Saluda in South Carolina were direct outgrowths of the manufacturing propaganda, as was Athens Factory in Georgia. Mills were built in Jefferson,

Richmond, Greene, Clarke, Oconee, Putnam, Warren, Upson, and Newton Counties, Georgia, making thirteen in Georgia by 1837 according to Sherwood's list. One in Maury County, Tennessee, was started by a former Rhode Islander, and factories were proposed in several other localities of the state. Even the newly opened cotton raising states of Alabama and Mississippi each boasted a little mill.

The McLane report on manufactures in 1833 disposed of the South by saying that those states ought not to complain of the tariff, because the people made at home practically everything they used. But the census of 1840 shows a gain, and a large proportion of it occurred before 1834. Virginia is listed as having eighteen cotton manufacturing plants, four cordage plants, and a large number of fulling mills. North Carolina had twenty-five and South Carolina fifteen, all fairly scattered. Georgia's nineteen cotton manufacturing establishments were along the fall line. Tennessee, like Virginia, had many fulling mills and thirty-eight cotton mills scattered over the entire state.

All the states had some iron works—furnaces, bloomeries and forges—but only Virginia and Tennessee turned out as much as two thousand tons. Virginia reported two million dollars' worth of tobacco manufactures, but the industry was so scattered in every county and in a multitude of establishments that it must have been on the scale of small shops. The same is true of wagons, carriages, leather goods, and of grist and flour mills. Every county in each state had its quota evidently sufficient to supply the local demand on a custom, or at least a small shop, basis. It may be said in passing that practically the same situation is shown by the census of 1860.

By this time, then, two facts were

obvious: one was that certain centers favored by water power and transportation, as Richmond, Petersburg, Fayetteville, Columbia, Augusta, Athens, and Columbus, were forging ahead of the areas with more scattered facilities for cotton manufacturing. Another was that cotton manufacturing was outstripping other textiles and indeed other products on any factory basis, both in actual practice and in the minds of the public. Just as the term "mill" meant some sort of grain mill, so the term "factory" meant cotton factory, and a plea for manufacturing meant, nine times out of ten, a plea for cotton manufacturing.

THE ANTE-BELLUM BOOM PERIOD

The term and the plea were on many a tongue and in many a newspaper from 1845 to 1852; and for a time, economic conditions combined with propaganda to make this a period of rapid advance.

The panic of 1837 and the succeeding depression showed the South how far the tariff and the concentration of manufacturing and commerce in the North had made the whole area dependent on the rival section in commercial and financial matters. The discontent, which found expression in a series of commercial conventions, was augmented in the early 1840's by a new and disastrous decline in cotton due to the opening of greater and ever greater cotton raising areas in the Mississippi Valley. The bottom was reached in 1845, with cotton averaging 5.63 cents on the New York market and of course netting the farmer a cent or two less. Prices for the whole decade were calamitous to the old cotton states with their exhausted lands.

In the flood of articles, pamphlets, and speeches on the crisis in the South and its remedies, almost everybody was agreed on two general propositions:

that there was an overproduction of cotton, and that any fundamental remedy must include manufactures of cotton by the states that raised it. South Carolina public men and newspapers took the lead in the discussion: J. H. Hammond, R. W. Roper, William Gregg, Senator McDuffie, Representative Rhett, the *Charleston Courier*, several old agricultural societies, and new societies for the promotion of mechanical arts. Innumerable newspapers all over the South—and the North too, for that matter—published editorials and speeches on the subject; *DeBow's Review*, founded in 1846, had the development of manufacturing, especially cotton manufacturing, for a sort of religion. Hunt's *Merchants' Magazine* was surprisingly interested for a northern publication; and two Northerners, C. T. James, pro, and A. A. Lawrence, con, carried on a heated argument through the pages of this magazine, urged on by Hamilton Smith of Kentucky and calmed by the more level-headed, practical Gregg.

ARGUMENTS FOR MANUFACTURES

Figuring the possible profits from manufacturing was a favorite pastime, and glowing pictures were painted of profits from ten to sixty per cent; but even the lowest were tempting as compared with the two to three per cent—if any—of cotton planting in North Carolina, South Carolina, and the older sections of Georgia. Another great set of arguments centered around the profitableness and the practicability of the use of slaves in cotton mills and the advantages of providing labor for the poor whites who were forced out of the staple raising and were becoming a social and economic problem.

Protagonists of manufacturing spent a good deal of time and energy answering the old southern prejudice against

the demoralizing effects of manufacturing. They reassured everyone, including themselves, that going into manufacturing would not make the South go over to the hated tariff; on the other hand they struck a most responsive chord when they preached independence of the North. They discovered the natural advantages of the South in water power, coal, water transportation and the newly developed rail transportation, nearness to raw material, lower cotton, cheaper labor, and lower cost of living. They devised ingenious plans for supplying capital and attracting skill; they minimized the failures of some famous mills and extolled the works of such public-spirited and successful entrepreneurs as Gregg, Daniel Pratt, and Hamilton Smith. There has hardly been a major argument or a device set forth since that was not presented in those years.

PROGRESS IN COTTON MANUFACTURING

The recovery in the price of cotton in the early fifties and the rising heat of the slavery issue gradually turned the attention of the multitude from cotton manufacturing, but not until considerable advance had been made. Georgia made the most progress. By 1850 the thirty-five mills of that state were turning out over two million dollars' worth of products—a sevenfold increase of goods with a threefold increase of capital and operatives since 1840.

Two notable water power developments were projected and completed in this period: at Augusta a canal and dam developing 600 horse power, and another at Columbus developing 2,700 horse power and capable of driving nearly 200,000 spindles. Mill building at both these old centers was stimulated. Clarke County had as many spindles running by individual power

development. Alabama boasted twelve mills with a total of over 19,000 spindles. Virginia showed substantial increase—from 40,000 spindles in 1840 to 54,000 in twenty-seven mills in 1850. North Carolina and Tennessee continued to build little spinning mills; the former had 48,000 spindles and the latter close to 30,000. South Carolina added few mills, but among them was Gregg's famous mill at Graniteville which served as an object lesson for the entire South as to what could be done in large-scale production, comparing favorably with many northern mills in size, management, capital, and quality of output.

The census of 1860 shows some progress, but most of it was made, if we can judge from speeches and news items, in the early years of the decade. The active campaign for mills had about died away by 1853 and building had almost ceased.

MARKETS

The question of markets had never been a fundamentally difficult one. In the early days the little mills had depended on local consumption, often on a basis of barter. Some had it specified in their charters that they should be allowed to peddle their products in certain counties. Gradually the market for individual mills grew until by the 1850's their yarns for the use of the home weaver and their fabrics were advertised by name at considerable distances from the factories. Some mills had agents in the lower South, and some sold through wholesalers in Charleston and New Orleans and other cities. Because of the very nature of its product, the South furnished for the new industry a market that was always expanding. But mills and interested public alike longed for broader fields, and it was during this ante-bellum boom period

that the southern textile industry began to enter the national markets. Mills and newspapers, speakers and propagandists boasted of shipments of yarn and cloth to the great textile trading markets of Baltimore, Philadelphia, and New York, and to the consumer markets of the West; boasted also that they compared favorably with northern goods.

But if the mills entered into the advantages of a wider market, they also experienced some disadvantages. Hampered by lack of marketing experience, by small working capital, and by the concentration of capital in the North, the little mills fell too much under the control of the commission houses, a source of dissatisfaction which reappeared after the Civil War. Mill building and the forming of mill companies received discouragement because of the failures of some of the most prominent ventures. Lack of experience with manufacturing and with corporate forms of enterprise, and to a certain extent limited technical skill, were all weaknesses of the new industry.

CONCLUSION

The development of the textile industry in the South shows a curiously cyclical nature that has about it more than a little of the effects of human design added to the imponderable economic factors. There were three periods of heightened development while the technique was in the home-spun stage: the seventeenth century in Virginia, the period just before the Revolution, and the 1780's and 1790's. There were three while the industry was in the custom shop and mill stage, when improved machinery was serving as an adjunct to the hand worker: during the War of 1812, from the late 1820's to the early 1830's, and from 1845 to about 1852.

These phenomena have not disap-

peared since the industry entered the system of complete machine production and wider economic influences. There have been several distinct periods of awakened interest when public attention has been added to economic opportunity, and together they have greatly affected development since the Civil War: a hopeful spurt just after the war, extinguished by Reconstruction; and a real campaign of propaganda in the various states—North Carolina and Georgia in the 1870's, South Carolina in the early 1880's, and all the states in the eighties and following 1894. In the first decade of the new century, popular interest and influence was directed toward the building of weaving and fine goods mills in order to render the industry more independent and profitable than did the older coarse goods and spinning mills. Just after the World War there was a veritable campaign for diversification and finishing.

Other industries in the South have for a time caught the attention of a city or a state; textiles have interested the whole South and have affected the whole South, and have in turn been

repeatedly and enormously influenced by that interest. The problems which industry and the proponents of industry faced before the Civil War, and to a certain extent until 1900, were largely southern: prejudice against manufacturing and cities, lack of capital and skill, and preference for agriculture with its profits and settled habits.

More recently the problems have become larger than the southern problem of more and bigger mills: world markets and world overproduction, high finance and consolidations, heightened technical and managerial skill, and labor laws and labor relations. Most of these have grown out of conditions and attitudes far afield from the southern public which used to influence the mills so definitely; but this widening has tapped a public interest in the industry equally as great. The problem has now become one of orderly progress—stabilization and rationalization—rather than one of mere material size. It is not unreasonable to believe that this widened interest may have at least as great effects on the enlarged ramifications of the enlarged industry.

The Civil War and Social and Economic Changes

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TWENTY years or more after the Army of Northern Virginia laid down its arms, many Negroes and rural whites were still using "The Surrender" as the fixed point from which they dated the important events of their lives. Appomattox marked the frustration of the desperate struggle for Southern independence, and also the gift of freedom to the slaves. To the great majority of both races the word symbolized the most intense emotional experience of their existence. Life could never be the same again.

SOUTHERN CONTRASTS

We speak therefore of the South that has grown up since the Civil War as the New South, but much that is written of both the old and the new is misleading. Men continue to speak and write of the South as if it were a homogeneous entity, which is precisely what it never was, and is not now. It is an extensive region with a great variety of elevation, soil, and climate.

The region was settled by different racial stocks, and those of the same stock coming from different social classes brought with them varying attitudes toward the business of living. English, Scotch, Irish (both Catholic and Protestant), Welsh, Germans from several states, French, Swiss, and Spanish all came to dwell in the land—and in a rural environment differences persist. There was the South of the plantation, and of the upland farm; of the coastal plains, and of the mountains; the South with lands almost incredibly fertile, and the barren South where living was hard; the civilized

South, and nearby the South ignorant and rude; the austere Calvinistic South, and the South of romance; the haughty, aristocratic South, and the democratic South.

The war fused, or seemed to fuse, all these variants into a whole; but the fusion was more apparent than real. The components tended to separate. Reconstruction, more than war, made a permanent impression, and the results are still apparent; but, nevertheless, any one who attempts to generalize concerning the South is treading upon thin ice. However, the general effects of war and reconstruction can be described.

War did not engross all the energies of the people. The ordinary processes of life followed in sequence—hindered somewhat by the military struggle, to be sure. Fields were plowed, crops cultivated; men bought and sold hoping to make a profit, or to avoid a loss; mechanics, black and white, carried on, using substitutes where they could not get the usual materials or tools; men and maidens flirted and danced while Grant was hammering at the defences of Richmond; children were born, and experienced the vicissitudes and the pleasures of childhood. Indolence, industry, willing sacrifice, crude selfishness, exalted vision, and sordid conduct were all apparent. Human nature is complex, and only fanatics can be continuously single-minded.

The story of the Confederate soldier limping home has often been told, never better than by Henry W. Grady, whose description has become a classic. The soldier found his home dilapidated,

for the existing factories had been engaged chiefly in working for the government, and the blockade prevented the renewal or replacement of manufactured articles. Tools, implements, household furniture, and the better grades of clothing, could not be replaced when they were worn out, and either substitutes were found or the family did without. Envelopes were made of wrapping paper or even wall paper, and after using were steamed and turned inside out to be used again. A piece of board took the place of a broken window pane; thorns were used in place of pins. Dozens of other makeshifts might be mentioned.

These deprivations caused much inconvenience and some suffering, but an astounding fact is that there seems to have been so little scarcity of the basic articles of food up to 1865. Under direction of the women, the old men, those able-bodied men that escaped conscription, and faithful slaves, sufficient food was raised not only for the population at home but also for the armies. Pitiful stories are told of the sufferings of the soldiers, but it is quite clear that the scarcity arose primarily from inadequate transportation facilities, and was increased by the inefficiency of the War Department. While Lee's armies were suffering, great quantities of food were going to waste in various parts of the Confederacy. Sherman destroyed enormous quantities of food of which the Army of Northern Virginia was in desperate need. The scattered Confederate cavalry and the guerrilla bands destroyed more. Quite evidently, the food-producing capacity of the region had not been tested in the years before the war.

Certain imported articles of food were scarce, of course, or were not to be had at all. Long before cereal coffee was advertised as a health drink, Southerners had learned to drink it

from necessity. A cereal, usually rye, was treated in the same manner as coffee. Many learned to like the beverage and continued to drink it after coffee was procurable. A drinkable concoction was made of slices of sweet potato, roasted and powdered. Tea and spices were likewise scarce, though the woods and the fields furnished substitutes of a sort. Refined sugar and salt also were scarce in places.

COTTON-RAISING AFTER THE WAR

The returning soldier sometimes found upon his place a few bales of cotton which had escaped appropriation or confiscation. The world was hungry for cotton, and bought all offered, at a high price. Up to 1865 most of the cotton had been raised by slave labor upon the plantations, and the high price encouraged all to attempt to raise a crop if labor and supplies could be had. Many of the cotton factors who had been accustomed to make advances upon the ante-bellum crop were bankrupt, but the few who were solvent attempted to renew their relations with the planters. Others were able to get money from the North, especially from New York. Though credit was not easy to obtain, the land, the long growing season, and the specialized knowledge of cotton culture were at hand. There was also abundant man power if it could be utilized.

Somehow, a crop was planted. A few owners who had managed to keep or to get a little money attempted to pay regular wages; more promised wages when the crop should be gathered; still others offered to give a share of the crop. In all these cases, work was done under the supervision of the landowner. They were attempts to adapt the plantation economy to new conditions. Some of the Negroes worked faithfully during the year, but more were unable or unwilling to labor

steadily, now that the element of compulsion was removed. Some refused to contract to work more than two or three days a week. When regular wages were received, many refused to work until the money was spent, even though the crops suffered. Those working for deferred wages took many holidays. Even those who worked for a share of the crops worked hardly half the time. Freedom, in the Negro's mind, seemed to mean freedom from regular toil.

Under slavery, they had worked from necessity. When freed, there was no longer a power which could physically restrain them, or punish them for absence. So, a "protracted meeting," a political gathering, a funeral, a military drill—anything in the nature of a pageant—called them and they responded. They went fishing or hunting, or rambled in the woods; sheer indolence often kept them from the field where they were badly needed, and the landlord was powerless. Planters who had been successful with slave labor found that they had to learn a new technique to deal with the freedman. Some few were able to adapt themselves quickly to the new conditions; more were unable to meet the new situation successfully.

In spite of all obstacles and hindrances, over two million bales of cotton were marketed during 1865 (nearly half as much as in 1861) and for this the growers received a price which brought a large amount of money into the impoverished South. However, when division of the proceeds was made, there was another story. The laborers had existed, but the cost of their subsistence in many—perhaps most—cases had been greater than the value of their labor. The cotton factor had charged high, though perhaps not exorbitant, interest, and in a very large number of

cases, the planters were not able to pay all their debts. Many offered their land for sale, but buyers were few.

During 1866 labor grew even more unreliable. The rumor of changes in the status of the freedman was in the air. Many officials of the Freedman's Bureau were ignorantly or intentionally demoralizing their charges; the carpet-bagger was beginning to make his influence felt. The season was unfavorable, the crop was small, and the price received was low. The reduction of the cotton tax from five cents a pound to three helped very little. Nearly all the planters seem to have lost money on the crop of 1866, and many were thrown into bankruptcy and carried with them some of the factors who had made advances.

In the class which included the owners of the larger plantations, most of the young men had gone to war. Some never returned, some were crippled or returned with health broken by hardship and exposure; others, as always happens, were demoralized by their experiences and could not readjust themselves; still others, who returned unscathed, recognized that a new order was inevitable, and, hopeless of the future in their old states, began to migrate to the West and the Southwest or to New York, which has always been hospitable to Southerners.

FAILURE OF THE PLANTATION SYSTEM

As a result of all these factors, thousands of plantations or parts of plantations were thrown upon the market for what they would bring. Some of the small farmers who had hired no labor had made a little money upon the two crops and were able to increase their holdings. Some of the landless whites contracted to buy land. Residents of the towns also bought as a speculation, thinking that one could not lose in buying for \$10,000 a plan-

tation which had been valued at five times as much. It is also probable that some of these townsmen bought land because of the social esteem which had been associated with the ownership in other days. A few Negroes also bargained for land, but at this period it seems that few were successful in completing the purchase.

Thousands of the old owners, however, grimly persisted in the attempt to save the plantation system. They had the land and they knew of no way of making a living save by raising cotton. Some managed to survive and a few prospered, but year by year, all through reconstruction, others were forced to acknowledge their failure. This was particularly true in the earlier seventies, when the price of cotton was steadily falling. Today, few large plantations are intact in the families of the ante-bellum owners, though in some cases a member of the younger generation who has prospered in a profession or an industry has repurchased the ancestral acres.

Though threatened, the plantation did not disappear. The census figures of the size of farms in the South are misleading. Though the average size of farms in the South dropped from 335.4 acres in 1860 to 214.2 acres in 1870, to 153.4 acres in 1880, and has continued to fall, this does not mean corresponding diffusion of ownership; for the census counts a plantation divided into ten tracts and rented to tenants as ten farms, though the ownership is single. No one knows the exact number of farm and plantation owners in the South, or the average holding. There are still many large plantations, though for the most part they are worked by tenants. In fact there seems to be at the present time a distinct increase in the number of large holdings, some of which are owned by corporations.

TENANT SYSTEMS

After 1866 it was evident that the wage system would not work, even though wages were falling. Almost spontaneously, tenant systems sprang up, and have become the distinguishing feature of southern agriculture. Tenancy has taken several forms at different times and in different sections, and most of them survive. We hear of "cash tenants," "standing renters," "cash-share tenants," "share tenants" (renters), and "croppers." One form which promised to be popular has almost disappeared. The tenant, in return for the use of a fixed number of acres, worked a certain number of days each week for the landlord, spending the remainder of his time upon the land he had rented. This variant of medieval serfdom is said to have been worked out by a Negro.

Some of these forms of tenancy are common in one section and little known in another. All began in the same way. The landowner marked off a tract and erected a cabin, often of the rudest sort, and the tenant moved in. Occasionally the rent was stipulated in cash, or at a fixed quantity of produce, or a combination of the two. Much more often the rent was a share of the crop to be raised. The proportion has varied at different times and in different sections. At first, there was a rough estimate that one third of the crop was attributable to the land, one third to labor, and one third to livestock, seed, and tools. So, if the tenant furnished everything except the land and the cabin, he received two thirds of the crop. He was a so-called renter. If he furnished only his own labor and that of his family, he received only one third and was called a cropper. As the years passed, the share attributable to labor alone increased until the cropping arrangement now generally ac-

cepted was reached, by which the landlord furnished everything except fertilizer, the cost of which was divided, as was also the cost of ginning. The remainder of the crop was then divided equally.

Few tenants, white or black, could maintain themselves during the months the crop was growing. For that matter, how many city mechanics could live without credit if wages were paid only once a year? Bank credit could not be obtained by renters or croppers. Some landlords were able to furnish food for their tenants, and that is now a common practice, especially in the Gulf States. There are really two forms of cropping tenancy. In one, the owner of a plantation, who may be able to secure bank credit, sets up a "commissary" and issues to his own tenants, salt pork, meal, flour, molasses, and a few other staple articles. The mules are kept in a central barn, and the implements in a central shed. The tenants are more or less supervised in their work, and in some degree the principles of organized industry are applied. More commonly in the upland South, the landlord turns over his land to the tenants and hopes for some return. The tenant must secure his own credit.

To meet this demand in the upland South, a new figure entered around 1870—the country or small-town merchant, who became increasingly important. For the protection of the landlord or the merchant, the states passed crop-lien and chattel-mortgage laws, which enabled a tenant to mortgage his share of the growing or even the unplanted crop and also his work animals and farming implements, if he owned any, to obtain food and other supplies. From time to time while the crop was growing he was furnished with the bare necessities of life, and, occasionally, a little money. Seldom, al-

most never, was interest charged, but the prices to the tenant were always higher than those to cash customers, sometimes as much as twenty-five per cent. As the items ran for much less than a year on the average, the tenant farmer was really paying an interest rate of forty to sixty per cent a year. This was and is true not only of the tenant farmer but also of the poor landowner who must resort to store credit. It really amounts to a democratization of the credit which the planter once got from the factor.

Since the crop was mortgaged to the landlord or merchant it could not be sold without his consent, and in fact he was usually the buyer. That the seller always got the highest price for his crop cannot be maintained, though many landlords and merchants were honest. At any rate the cotton was sold without competition. The store accounts, and perhaps the fertilizer and ginning charges, were deducted and the farmer got what was left. Occasionally, when the tenant and his family were industrious and frugal, the crop good, and the price above the average, there was something left. Often, an unfavorable season, low prices, misfortune, or his own incompetence, left the farmer with a debt which was carried over to the next year, or which the merchant had to write off as a loss. If the landlord or the merchant were unscrupulous—and there were such—the illiterate farmer never had a chance.

Such is the tenant system which developed in the years after the war, and has today a strangle hold upon southern agriculture. It is difficult to see how the southern farmer could have lived without it during the dreadful years, but today it is almost an unmitigated curse. A possible exception is a small class of what may almost be called permanent tenants. A farmer having more land than he can properly

cultivate leases a part to a tenant, white or colored, giving him the benefit of his advice. When not engaged upon the land, the tenant or his family may do an occasional day's work for the landlord, receiving pay either in cash or in kind. Relations often become close and both parties profit by the arrangement, which may continue many years.

The growth of the tenant system, the reasons for its concentration on cotton and tobacco, its effects in degrading southern agriculture, and its social effects, fall without the limits of this paper, which was to be confined to the years 1865-1880. During this period, as we have seen, the importance of the plantation declined, many small landowners secured additional acreage, many landless whites and Negroes secured possession of land, and the tenant system arose to save the people temporarily—to injure them later.

DECLINE OF ARISTOCRACY

War and reconstruction affected more than the economic life of the South. These two catastrophes set in train forces which profoundly influenced social relations and social standards, and these forces are still operative. The situation in the South is dynamic, not static, and even greater changes may be expected.

The South as a whole was never so aristocratic as is commonly believed. Careful students of the ante-bellum scene—Bassett, Dodd, Ingle, Gaines, Odum, and Phillips, to name only a few—have constantly emphasized this fact; but the plantation tradition is so firmly imbedded in literature, in the drama, and in popular song, not to mention elementary textbooks, that the task of correcting or limiting it seems hopeless. Authors—historians even—who should know better, constantly write as if the plantation were

universal and the white population composed of large planters and the disinherited.

In fact, as Gaines well says, "colossal estates were the exception, not the rule." In some great areas the plantation did not exist. Appalachia contained almost none; in the Piedmont, there were few except in the fertile "river bottoms"; and still fewer were in the sandhills and the pine barrens. Beyond the Sabine, though land was often held in large tracts, there were few typical plantations. On the other hand, all through the South there were many small slaveholders, and more sturdy, self-respecting families owning no slaves at all and yet holding a recognized place in their communities. To say that there was no middle class in the South is just as silly and as untrue as to deny the existence of such a class in England in the early nineteenth century. To be sure, it was no more articulate in the South in 1860 than in England fifty years earlier; but it existed nevertheless.

In limited areas of the South the plantation system was common, and everywhere in the South the planter class had an influence altogether disproportionate to its numbers. The plantation ideal was important, if not entirely dominant, economically, socially, and politically. Again our comparison with England in the early nineteenth century is valid, putting the planter in place of the gentry. Except in limited areas, however, social lines were not so tightly drawn as the plantation tradition would indicate. Sons of artisans and small farmers did rise to high position in both state and Nation. For example, Governors Swain, Bragg, and Vance, of North Carolina, and Brown of Georgia were certainly not aristocrats by birth, nor were John C. Calhoun and Jefferson Davis. Nathaniel Macon and

Alexander H. Stephens were both poor boys. Dozens of others might be mentioned. In fact, strong support might be adduced for the thesis that some of the Southern states in 1860 were quite as democratic as southern New England, where an industrial plutocracy was developing.

Existing social distinctions began to break down during the war. While the planter class furnished a disproportionate share of the officers of the Army, plain men were often elected and some rose to high rank. Then, too, the very intensity of the struggle had its effect in creating a sense of fraternity. The plain man often showed ability and steadfastness at least equal to that displayed by the aristocrat, not only during the war but also in the days of reconstruction. During this period and for years after, a military title almost automatically put its possessor among the elect. The struggle to attain white supremacy did much to break down surviving distinctions among the whites.

The decay of the plantation after the war has already been discussed. New men came to the front as the fortunes of the planter declined. While some of the old families withdrew into their shells and brooded upon their departed glory, others faced the facts squarely. Men and women who had been tenderly reared did manual labor, even menial tasks, which had always been done by slaves, and did not whimper. Two memories of my youth are vivid yet: one, a Confederate colonel bringing to town for sale loads of wood, which he had cut with his own hands; the other, the daughter of a famous chief justice tramping over her farm in rubber boots and doing the most unpleasant tasks that came to hand. Even where the older generation remained constant to standards of another age, youth would not always be

denied. Young men and maidens, all poor together, met, and many marriages between individuals of widely differing tradition took place.

INDUSTRIAL DEVELOPMENT

Before the war there had been prophets of industrialism in the South, though most of their preaching seemed to fall upon deaf ears. King Cotton held sway, and his courtiers formed the largest part of the articulate population. There is something about cotton which has a hypnotic effect upon those who deal with it. However, the advocates of industrialism, or rather of a better balanced society, had some influence. There was more manufacturing in the South in 1860 than is generally realized. There were many little textile mills, chiefly in the Piedmont, and also many little blast furnaces and rude tobacco factories; though in all of these industries, the aim was primarily to satisfy the local demand. Many small wood-working establishments had the potentiality of growth. There were some larger establishments, and, but for the war, there might have been a considerable development. The truth is, however, that the old South was not "industrial-minded." The whole structure of industrial society with all its connotations was obnoxious to a large part of the articulate South, and it is perhaps futile to speculate whether industrialism could have developed under slavery.

During the war the principal manufacturing establishments in the Confederacy were engaged upon government contracts or else were under governmental control, and could not meet the demands made upon them. They were paid for their products chiefly in government securities and when the war ended they were practically all bankrupt. Union raiders

destroyed every mill or factory they could possibly reach, and General Stoneman's name is yet remembered because of such activities. Other mills and factories were worn out by continuous use without proper repairs or replacements. Though a few establishments were intact and in good condition, the manufacturing facilities of the South had been almost destroyed by the four years of conflict.

The condition of the railroads was deplorable. Where they had not been destroyed by Union armies they were literally worn out. They fitted perfectly that famous description, "two streaks of rust and a right of way." Earlier mention has been made of the inadequacy of the railroads in the supply of food to the armies in the field. Even had they been better managed, they would have been unequal to the task. In 1865 they required practical rebuilding. The fact of the inadequacy of the existing lines had been deeply impressed upon the minds of all who could think, and there was a demand for extension. This demand was capitalized by the Radical leaders, and the Reconstruction debts of the Southern states were largely incurred to assist railroads. To be sure, most of the money was stolen, and few miles of railroad were built; but the demand continued down to the present era of good highways and the motor truck.

During 1866 and 1867 some of the little textile factories were rebuilt, where money could be found. The story of the appropriation of tobacco stored in Durham (then only a way-station) by both Northern and Southern soldiers has often been told, and must have a basis of truth. This apparent misfortune turned out to be nation-wide advertising, for which the owners could not have paid, and laid the foundation for the growth and

prosperity not only of Durham but also of the other tobacco towns of the Piedmont. These tiny mills and factories showed that there was profit in transforming raw material into a finished product, and towns began to grow.

Towns (except a few cotton and tobacco markets) had been negligible in the old South. It used to be said in North Carolina that Lord Cornwallis would recognize certain towns should he return to the state. The center of gravity had been in the country. Now, those who despaired of continuing the plantation system began to come to the towns. Some of these newcomers had some capital from the sale of their land. The merchant assuming the function of making advances to tenant farmers, and buying their cotton, sometimes made money. Parenthetically it may be said that no social phenomenon has been more interesting than the reversal of the importance of country and town in the South during the last half-century.

Next to the immediate necessity of making a living, the struggle for "white supremacy" was the chief interest during the decade 1867-1877. Yet there was an undercurrent all through the Piedmont. Men were saying that the Confederacy had not been beaten in the field but had been strangled, because it could not get the necessary goods—because it had not been self-sufficient. Men began to question, and then to reject, the old attitude of the South. We began to hear much talk of natural resources, and then the wish that they could be utilized; the hope that northern or foreign capital would come down and develop them. As for the Southerner, it was said, he had neither capital nor the industrial tradition. Industrial management was regarded as a deep mystery. Men did not realize that

successful management of a great plantation was a task quite as difficult as the management of a mill.

DEVELOPMENT OF SOUTHERN INITIATIVE

Northern capital was timid and did not come in great amounts. Meanwhile, it was found that Southern whites could spin yarn and weave cloth which could be sold in competition with that of New England, and that Negroes made satisfactory hands in tobacco factories. New cotton mills and tobacco factories were established; old ones were enlarged. Perhaps young J. B. Duke had not yet worked out the scheme for the American Tobacco Company, but W. Duke and Sons were making more money than they had supposed there was in the world. Industrial management was found not so difficult. The merchants, the bankers, the planters, the cotton buyers, and even the teachers and the preachers in charge of cotton mills found that their nearness to the soil gave them a real advantage over northern-born superintendents in dealing with the country people who were flocking to the mills as fast as they were opened. So far, the southern laborer was an individual; and ability to deal with individuals was found to be worth more than technical knowledge.

The mills and factories made money—some of them a great deal of money in proportion to their capital. This was due to several advantages, some of which, by the way, no longer exist. The greatest asset probably was tractable labor, willing to work long hours for low wages. Wages were low (and are not high yet), but the relation of cotton mill wages to agriculture has not been sufficiently emphasized. The wages had to be high enough to draw the laborers from the farm and hold

them in the mill. In the very nature of things, in an occupation quickly learned, with an immense reservoir of farm labor from which to draw, cotton-mill wages could not be much higher than the returns from agriculture, except perhaps temporarily, as the result of collective bargaining. During the seventies, many tenant farmers got more deeply in debt every year. The wages in the mills though low, were so much higher than the returns from the farm that comparatively few have ever gone back.

Neither must it be forgotten that while wages were low, the cost of living was unbelievably low. Some of us who do not yet consider ourselves old remember clearly the times when ten cents a dozen for eggs, twenty cents a pound for butter, eight to ten cents a pound for pork and beef, twenty-five cents for a hen, and half as much for young chickens, were standard prices. Vegetables could hardly be said to have a price.

During the late seventies the many successful southern cotton mills destroyed the haunting fear that only Northerners could manage industrial enterprises, and about 1880 the Piedmont South began to build cotton mills in earnest, and for twenty years new mills were constantly springing up upon the hillsides. Machinery houses were glad to grant long credits and to subscribe for stock, which they usually sold back to the promoters as soon as the mill was on its feet. An ingenious installment plan by which the small savings of the many were made available, helped to build many mills. When the Southerners had proved that cotton mills could be successful, northern capital was willing to invest.

The effect of the rise of industrial enterprises upon the social fabric of the South must not be overlooked.

Into the mills went the ignorant and the thriftless, the despairing tenant farmer, the discouraged small landowner, and also members of aristocratic families who needed bread. The manager of the mill was sometimes an aristocrat but more often a member of the middle class, and in the long run, pecuniary success brings social esteem. The grandchildren of some of these farmers or merchants who turned manufacturers, now play in Europe with the titled, and marry into the most exclusive circles of Eastern society.

All of this story of the decline of aristocracy is true, but it is not all of the truth, for the South is a land of

contradictions and contrasts. In a few cities the old social cleavage persisted, and the lines are not yet wholly obliterated. Villages untouched by industrialism long pretended that the world had not changed. Even today, a few charming old ladies still live in another age, surrounded by mementos of pleasanter days.

Nor did the common man at once become articulate. Reconstruction imposed a severe repression. He had been accustomed to listen with respect to his old commanders, and not until the late eighties and the early nineties did he find his voice and rise in rebellion. Now he rules from Virginia to Texas.

Growth of Manufactures in the South

By BROADUS MITCHELL

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IF an economist were given liberty to set a wide stage with all of the characters to make a social drama, he could do nothing more complete than what the history of the South offers. Here have been colonization by different nationalities, indentured servitude, the conquest of the wilderness, healthy beginnings in handicraft industry, the invention of the cotton gin which established Negro slavery and a staple agriculture, futile efforts in the forties and fifties to revive manufactures, the rationalization of an economic system into a political theory of separatism, civil war, a harsh period of economic and political readjustment until 1880, the break-up of the plantation system, the bold emergence of large scale industry with free labor, and now the growing clash of capital and technical efficiency with labor unionism. The plot of the drama has constantly thickened and is at this moment in a most exciting phase. All has been enacted in an environment of abundant natural resources and a favorable climate.

INDUSTRY THE CENTER OF SOUTHERN CHANGE

Of these changes, that which compasses the introduction of manufacture after the Reconstruction Period claims present attention. It is the most dynamic of all, and the most revealing. It binds together most elements in the past and the present of the South. It is the sun in this economic planetary system. One remembers the experiment in physics of joining springs so that several forces meet at one point.

The arrival of industry in the South supplies such a focus. Social pulls and counterpulls which center upon the factory involve agriculture, the status of the poor whites, the future of the Negro, education, religion, political thought and behavior, shifts in population, and many other tremendous items.

What is to be the result of the sudden advance of industry toward physical maturity in an environment of agricultural habit and tradition? Is southern society to stumble into the pitfalls which marked the wake of Arkwright and Watt in England? Or may we steer around some of these? Will the concept of social control and the agencies to give it actuality be evolved speedily, or by muddling trial and error? Does the history of the South suggest facilities for social analysis and social management, or are we barren of these talents? Is the sea-change complete, or does the merman remember the kirk on the hill?

I might devote the space allowed me for a discussion of southern industrial growth to a recital of statistics, as I have tried to do elsewhere. The progress of old industries, the hatching of new ones, the value of manufactured products (amounting now to almost \$8,000,000,000 annually), the increase in the number of factory workers, the fluctuation of wage levels, the fresh exploitation of natural resources, and the swift development of electric power, make an exciting story if rightly understood. But such an exhibit is apt to move on the surface without furnishing a dip into underlying currents. With

generous allowance for optimism, chambers of commerce and other agencies have given us such accounts, and some calmer enumerations are not lacking. The South is now apt in citations of its industrial pace. The implications of industry are more important—for the outsider, and particularly for the Southern people themselves. The present juncture demands not “political arithmetic,” but economic theory. The exhilaration of material accomplishment should begin to simmer down to speculation. We should not only be glad that our sails are full, but should also ask how the rudder is being manipulated and whither our craft is driving.

THE BACKGROUND OF SOUTHERN MANUFACTURES

The first point to be made is that it is footless to begin by deploring the manufacturing development in the South. I have seen the announcement of a new book, *I Take My Stand*, by eleven Southerners, advertised as a symposium by men who want a return to the agricultural régime. The contents of the book may warrant less censure, but its banner invites ridicule. Everything else aside, it is impossible to halt the industrial march which has been begun. Southerners who interpret membership in the old school as meaning abhorrence of factory smoke may learn something from the incident of King Cnut and the sea waves. They hark back to the day when Charleston would by ordinance have forbade the setting up of a steam engine within the city limits, laughed at by William Gregg almost a century ago.

The development which brought manufactures in the South was inevitable. The South before the Civil War had relied for manufactured goods almost entirely upon England and the North. Both sources of supply were cut off by the conflict, and during war

years the section was cruelly aware of its inability to furnish itself with military supplies, implements of production, and articles of consumption. Freeing of the slaves upset the plantation system, and the few men of enterprise, capital, and credit were bewildered, lacking accustomed channels of investment. The South did not catch up to prewar cotton production until a decade after Appomattox. Political rancor on the part of the South, encouraged by Reconstruction and expressing itself in the presidential campaigns of 1876 and 1880, availed nothing. The cry was for a way out. The answer came not only in political amalgamation with the rest of the Nation, but in the advice and the impulse to copy the industrial progress which the North was making. Cotton as cotton was shown to have been a tyrant who pauperized his subjects; but cotton as yarn and cloth invited larger gains for the South. The Civil War threw the South out of the socket of whole devotion to agriculture, and called for a new dispensation. Cotton mills began about 1880 to be built in numbers.

Not only was the inauguration of industry inevitable, but it has been the South's salvation. There could be no rescue for the poor whites except employment in factories. The proponents of the “American system” were right in insisting upon the “mutual fertilization” of a variety of economic pursuits—commerce, industry, and agriculture should be carried on side by side. The South for fifty years refused to follow this advice, and got itself suspected, defeated, and outlawed as a consequence. Now it is adopting the full program put forward by the nationalist economic advocates, even to the point of rendering the Democratic Party, in its tariff policy, indistinguishable from the Republican.

STAGNATION CAUSED BY SLAVERY

Manufactures have brought the South release from the stagnation which was the characteristic of slavery. Slavery never changed and it permitted nothing else to change, unless, indeed, there was degeneration due to soil exhaustion. Here and there individuals or small groups of planters experimented with new methods, but the bull-tongue plow and the heavy hoe remained the symbols of southern agriculture. Staple crops meant routine in production, in distribution, in exchange and in consumption of wealth. The credit system hung upon repetition of crops, and all else hung upon the credit system.

This universal extension of credit had not even the virtue of being centralized, which would have afforded certain insurance features and permitted some diversification, but was scattered in the hands of thousands of small men, principally country storekeepers. Where credit was on a large scale, as in State bank notes, other paper money, public bonds, and securities of works of internal improvement, there was apt to be fiscal ineptitude or downright fraud, followed by repudiation or failure. Instead of credit extension resting upon productive efficiency, it relied upon the certitude of time; as the seasons came and went, cotton, in the long run, would a little more than pay for the cost of growing it.

Political thought under slavery made no progress. Political theory certainly takes color from economic habit. Where there was no change in the methods of making a living, there was no urge upon government to alter its purpose. The law was a sanction for slavery; political philosophy produced, for example in Calhoun, a mere special pleader for an outworn economic system.

Religion in the South was likewise seduced by slavery, and became its hypocritical mistress. Sermons to slaves made it clear that it was the duty of servants to obey their masters, as it was the duty of the masters to obey God. When the slavery controversy became heated, the South was fecund in Scriptural defenses of its peculiar institution. When the Civil War came southern sections of evangelical denominations split off from the national bodies. Religion, like everything else, was a function of economic life. Not being forced to adapt itself to an altering economic environment, it became ingrowing, resulting in an easy moral code for the rich, emotional orgies for the slaves, and hell-and-damnation doctrines for the excluded, ignorant, half-existing poor whites.

Education marked time; scholarship offered no constructive social thinking for the Southern people. Sons of Southern families of wealth might go from the sea islands to Oxford, Cambridge, Princeton, or Yale, but they returned, "elegantly educated," to sink into the plantation system without a murmur. They were gifted and clamorous in debate, but poor at the business of analysis and drawing conclusions.

The proof of my point lies in Appomattox. The system which the South had sanctioned, with all of its defenses, brought up in surrender. Since every one now recognizes that that was a good thing, it is foolish to quarrel with the only system which could succeed it, namely, one of balanced industry, agriculture, and commerce.

INDUSTRY BRINGS SOCIAL GAINS

All of our social gains in the South have been associated with the advance of industry—employment for the poor whites, urban growth with all the activity this implies, sound banking, es-

tablishment of a wage system, greater productivity of wealth and its more even distribution, larger tax yields, better schools and roads, improvement of farming methods, and the growth of many governmental services. What the South needed throughout its prior history was productivity. This meant, first, abandonment of the expedient of mere exploitation—chattel slavery, soil exhaustion, defrauding of public and private creditors; and second, the emergence of a wider margin between the cost of production and the price obtained for the product. The old South had no social surplus, and consequently was limited on every hand. The new South of industry mixed with agriculture begins to have riches, and in that measure, as a people, begins to live.

If it is absurd to deplore the arrival of manufactures in the South, it is criminal to try to ignore the development. Mills and shops, dams and transmission lines, brokers and bankers to finance them, and commercial organizations to sell their products, are rapidly transforming the life of the South. Already it is the old creed rather than the new activity which needs explanation and championing.

Nor will it do to hold to a purely mechanistic view of society—to say that its future mold will be the result of economic forces or even mere accident. "Economic forces" embrace not only invention of machines and their operation in answer to the profit motive, but also a care for social consequences—a care which expresses itself in labor unions, protective legislation, and the assumption of economic authority and initiative by governmental agencies. In other words, we must try first to recognize what is happening through the industrialization of the South; second, to understand its implications; and third, to

control the outcome of the process, so far as possible, in order to derive the maximum of social advantage and the minimum of social hurt.

FEATURES PECULIAR TO THE SOUTH

There are important differences between industry in the South and in the North. In the first place, industry took its rise in the South fifty years later than in New England and seventy-five years later than in the Middle States. Second, the introduction of manufactures in the South was more abrupt than in the North. In New England there was the transition from agriculture to industry through the intermediate stage of commerce; in the Middle States (Pennsylvania typically) there was a gradual growth with the least possible clash of the three branches, and the greatest mutual benefit. But in the South, cotton mills were set down suddenly in cotton fields. There was, furthermore, in influential quarters a definite revolt against agriculture—a feeling that single devotion to agriculture had failed the South and needed to be supplemented by industry.

Third, Southern industrialists have a peculiar pride in their achievement. They began their work following a period, during Reconstruction, of political humiliation, and their tools were only such as were offered by determination in the midst of poverty. These things gave to the whole movement a social sanction, I might almost say social sanctification, which was largely lacking elsewhere. An added element to this end was the fact that industry, particularly the cotton factories, furnished bread and meat to the hordes of poor whites who waited to be reclaimed after the destitution which slavery entailed upon them. Thus, southern manufactures were imbued—often in the minds of the enterprisers them-

selves, and widely in the thought of the general public—with a philanthropic character. The racial homogeneity of the Southern people and the comparative similarity of climate and natural resources in the various Southern states, have contributed to give all economic effort a certain public quality, as contrasted with that of the rest of the country. The bitter struggle for the right of secession bound Southerners together, and a concept of separate identity remains, to this day, in an important degree. This has much to do with the uncritical attitude of Southerners toward their industry.

Fourth, money wages are lower in the South than elsewhere. For common labor, southern wages are from 50 to 65 per cent of those in the rest of the country; for semiskilled workers, from 65 to 85 per cent; and for skilled workers, wages paid in the South are from 75 to 100 per cent of those paid outside. These wage differentials hold whether the employing agency is private, a public utility, or a government service. In cotton goods, the southern average is 66 per cent of the average elsewhere, in lumber and timber 63 per cent, in foundry and machine shops 80 per cent, and in railroad repair shops 90 per cent. In 1929 the wages of casual farm laborers in the South averaged 48 per cent of those for the rest of the country.¹ In viewing these figures, three mitigating facts must be kept in mind: (1) some southern wage earners receive perquisites (hired farm laborers receive food and cheap rent, and cotton mill operatives receive cheap rent and fuel at wholesale, besides numerous social services); (2) the cost of living may be lower in the South; (3) the degree of skill compensated is on the whole not as high in the South as elsewhere. The first considerations may

be taken as raising the southern real wage somewhat.

I have quoted the differential in agricultural wages because of the low pay of farm workers (an average of \$1.55 per day in ten Southern states as contrasted with \$3.25 for the rest of the country), and because southern industries (as to a less extent those in America generally) are recruiting workers from agriculture, and the pay in manufacturing and mechanical pursuits, particularly where the learning period is short, is held down by earnings on the land. The South's population is still mainly rural and agricultural, although Southern states have led the country in rapidity of industrialization. In South Carolina the number of wage earners in manufacturing establishments increased 37 per cent between 1919 and 1927, in North Carolina 30 per cent, and in Georgia 25 per cent.² The birth rate in the South is high.

Intimately connected with the foregoing is the fifth fact of the South's Negro population. The presence of the Negro operates upon industry in several ways, depressing wages, reducing skill, curtailing power to purchase manufactured products, diverting white workers' attention from the economic to the race issue, and furnishing an enormous potential supply of industrial workers.

INDUSTRIAL CONCENTRATION

A sixth difference, and one of the most important, is that the South's industry is little diversified, and is relatively localized geographically. The cotton manufacture is the South's principal industry—in number of workers (one third of the South's factory employees are in it), in value of product, in capital employed, and in value added by manufacture. Manufactures of to-

¹ Heer, Clarence, *Income and Wages in the South*, Chapel Hill, N. C., 1930.

² *Op. cit.*

bacco, cottonseed oil, furniture and other wood products, iron and steel, fertilizers and chemicals, paper, cement, ceramics, and repair and building of railroad equipment, are the other chief pursuits. Others, such as lumbering, oil refining, flour and rice milling, and the processing of sugar cane, come so near to the extractive industries as not to claim attention in this discussion. Furthermore, the South Atlantic states are those in which industrialization has become important; the East South Central states have made less progress in the introduction of manufactures—in number and variety of plants and in degree of fabrication—and the West South Central group still less.

Thus there are few alternate employments for the industrial worker, and this reflects itself in wage levels and in the growth of skill, and is a hazard to the whole community. If one industry is peculiarly depressed or badly organized, as is the cotton manufacture at this time, whole cities and towns find their pay rolls and purchasing power shrinking. It is difficult for workers to improve labor standards so long as, in event of failure, there is nothing else to go to. At the same time it is to be said that there is every reason for optimism in the number of new industries being started in the South. As these mature and spread they are destined to have a large part in erasing other distinctions between southern and northern industry.

A seventh fact deserving mention is that in the South, industrial issues have not played so important a part in politics as they have in the remainder of the country. Perhaps it would be proper to speak more broadly and say that *economic* issues have been more in the background in the South. This, like some other facts which have been listed, is mainly because industry has not come of age. The South, more

largely than other sections, has been governed by a squirarchy dependent upon the land. Something like the British "Manchester School" is, however, beginning to emerge, and more and more it will bring political conformity with national economic advocacies, particularly in the matter of a protective tariff. This will be wholesome, because it will cut the ground from under mere rabble-rousers, tend to suppress the race issue, and invite workers to demand the same consideration shown to industrial enterprisers.

LABOR ORGANIZATION

An eighth special characteristic of southern industry (one implied in much that has gone before) is the newness of the organized labor movement. There are 160 Southern cities and towns with central labor bodies, whereas thirty years ago there were only ten. All states have state federations, whereas a generation ago there was not one in the South. The South now has more than six thousand local unions affiliated with the American Federation of Labor, and sixteen national unions are spending annually in excess of half a million dollars in assistance to southern organized labor. But in the South, labor organization has made little headway in the great industries employing relatively unskilled people. Unionists are in the building trades, railroading, government services, printing, and other crafts. Their best individuals have furnished little leadership for southern labor as a class; in their own trade union practice they have patterned after northern precedent, and have not addressed themselves, even as a flying squadron, to the peculiar southern labor problem.

However, new beginnings have been made recently. Almost two years ago, spontaneous strikes began in southern cotton mills and reached

peaks in the struggles at Elizabethton, Tennessee, and Gastonia and Marion, North Carolina. Forthwith the American Federation of Labor opened a campaign for the unionization of the South, centering particularly upon textiles. The Federation's approach is an educational one, as directed to workers, employers, and general public. Despite considerable spasmodic organization in the cotton factories in past years, the workers still need to be told the story of unionism, be convinced of its benefits as opposed to the mere patronage of employers' welfare work, and be disciplined in dues-paying and other aspects of union loyalty, as well as loyalty to their jobs.

The Federation is supremely mindful of the manufacturer's production problems, and is trying, wherever permitted, to show the employer how organized labor can coöperate with him in their solution. This engineering approach is carried over into the Federation's representations to the general community. It seeks to show that the cotton manufacture is a sick industry—a victim of waste, heedless competition, overproduction, and poor organization, particularly in the matter of distribution of output.

Further, it is shown that southern industry must look, for its sustenance, pretty largely to the purchasing power of southern industrial workers, and that while wages are low, prices must be low and markets sluggish.

This apostolate is having its effect. Workers are joining the union ranks in large numbers, employers are lending a surprisingly ready ear to the proposal of union recognition and collaboration, and public opinion is coming to see reason in the contentions of organized labor.

INDUSTRIAL PROGRESS

The Southern states (Virginia, West Virginia, the Carolinas, Georgia, Flor-

ida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas) in 1927 had 29,720 manufacturing establishments; these employed 1,348,201 wage earners, used 6,000,891 primary horse power, and turned out products worth \$7,674,480,997. The value added by manufacture was 41.5 per cent of the value of the products, as opposed to 43.9 per cent for the country as a whole. Between 1925 and 1927, the value of manufactured products fell off by \$72,415,000, but this difference was more than made up by an increase in the value added by manufacture—\$78,710,000—showing the progress that industrial processes are making.

In value of manufactures, the five leading Southern states in 1927 were: Texas, \$1,206,579,962; North Carolina, \$1,154,646,612; Virginia, \$671,346,808; Louisiana, \$638,361,215; and Tennessee, \$614,040,524. Georgia, Alabama, West Virginia, Kentucky, Oklahoma, South Carolina, Florida, Mississippi, and Arkansas came next in order. The high figures for Texas, Louisiana, and Oklahoma are on account of petroleum refining, this being responsible in Texas for a third of the total value of manufactured products.

The South was about half as far industrialized as the country as a whole in 1910, and three fifths as far in 1920, judging by the proportion of the gainfully employed who were in manufacturing and mechanical pursuits. If more recent figures were available, they would undoubtedly show further gain for the South. The South in 1927 had something less than a sixth of the country's total horse power in prime movers; of the South's total of 6,289,602 horse power, 2,934,600 was in electric motors driven by purchased current. Electric power plants are being built rapidly in the South, to be operated by water, coal, lignite, oil,

or natural gas, and are perhaps the best proof of the industrial advance.

The southward shift of cotton manufacture (and to a less extent other textiles) has taken three forms—the outright removal of northern companies, the building of branch plants in the South, and the relative growth of southern enterprises. This movement, more than any other, has called the South's industrialization to the attention of the country. In 1909 New England had half again as many active producing spindles as the South. By 1914 the lead had dropped to a third again as many, and in 1919 to a fourth again as many; but in 1927 the South was ahead of New England by 3,192,030, and the gain has continued since. Between 1919 and 1927, the number of idle spindles in North Carolina decreased by 25,468, while the idle spindles in Massachusetts increased by 938,265. The South now has more looms than has New England, while a decade ago New England had 85,000 more than had the South. In 1927 the southern mills used 72 per cent of all the cotton processed in American mills, had 53 per cent of the country's active spindles, and turned out over 57 per cent of the country's cotton goods by value. In 1930 the South had 277,820 wage earners in cotton mills, or 59 per cent of the country's total.

This progress in the South is due mainly to lower wages, better equipment and better and cheaper construction of mills, cheaper power, lenient tax policies, and longer hours of operation. Lower labor costs constitute the chief of these items, and the absence of organization among workers in the South heretofore has had much to do with poor labor standards. Not only are cotton mills concentrating in the South, but other departments of the industry are building plants here—finishing, re-

pairing, and machinery manufacture. Rayon has had a conspicuous growth in the South, and knitting mills, particularly on underwear and hosiery, are responsible for much of the South's progress in textiles.

VARIOUS INDUSTRIES

Iron and steel plants are important chiefly in Alabama, Tennessee, and West Virginia. The value of the products of blast furnaces, steel works and rolling mills, and cast iron pipe plants was \$395,911,530 in 1927. Alabama had 21 establishments, with 11,630 wage earners, and products valued at \$122,943,350; this state ranks fifth in the country's pig-iron production. Birmingham, founded in 1870, has the advantage of 32 to 45 per cent ores in juxtaposition with coal and fluxes. Birmingham steel, made by the open-hearth process, is increasingly finding a market within the South.

The cottonseed oil industry is practically confined to the South. For the year ending July 31, 1929, the 520 plants crushed 4,839,845 tons of seed, an increase of 349,197 over the previous year. Texas is the leading state, with Mississippi next. The value of all products in the year cited was \$253,325,000. This industry greatly assists southern agriculture by creating a market for the seed and supplying feed and fertilizer.

In 1927 the South had 36,118 workers in the cigar and cigarette branches of the tobacco industry, and 4,764 in other branches. The industry is concentrated in North Carolina, Virginia, Kentucky, and Florida, the first three being characterized by machine methods highly developed, and the last by hand production of cigars. North Carolina and Virginia in 1927 produced four fifths of the country's cigarettes. The tobacco manufacture developed from a plantation handicraft, and owes

much to the organizing ability of a North Carolinian, the late James B. Duke, founder of the American Tobacco Company.

The furniture industry is a new one in the South, and is developing rapidly in North Carolina, Virginia, and Tennessee. The first plant was at High Point in 1888. In 1927 there were in the South 384 plants, turning out products worth \$121,972,444. Finer and finer grades of furniture are being manufactured in the South,

with accompanying expansion of the markets.

Another wood-using industry is the paper manufacture, most important in Virginia, Louisiana, and Tennessee. Methods are being introduced whereby the resinous southern pines may be manufactured into grades of paper better than wrapping or kraft paper, which has been the South's chief product. Wallboard and insulating materials are being made from sugarcane bagasse.

Southern Textile Manufacturing

By CLAUDIUS T. MURCHISON ¹

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IN the year 1927, according to the census returns, the cotton-growing states produced 67 per cent of the country's yardage of woven cotton goods as compared with 62.5 per cent in 1925 and 54 per cent in 1921. Measured in dollar values, the South's percentages of cotton-goods output are somewhat smaller, being 56 per cent in 1927, 52.4 per cent in 1925 and only 44 per cent in 1921. While the figures indicate that the southern output is on the whole of coarser quality and of less value per yard, they also show that in rate of growth, southern values have increased more rapidly than physical output. Having attained predominance in the simpler cloth constructions, the South is turning its attention more and more to the finer weaves.

COMPARATIVE PRODUCTION FIGURES

Recent developments in the industry, however, induce the belief that the South will encounter a much more effective resistance to farther advances in the field of fine goods production than it experienced from 1921 to 1930. In 1927, southern cotton mills manufactured 84 per cent of the sheeting; 82 per cent of the print cloth; 74 per cent of the shirtings; 71 per cent of the gingham; 87 per cent of the denims; 94 per cent of the drills; 83 per cent of the towels and toweling; 98 per cent of the osnaburgs; 92 per cent of the cotton table damask; 75 per cent of the tickings; 72 per cent of the cottonades and cotton worsteds; and 83 per cent of the yarns sold by mills.

¹ Author of *King Cotton Is Sick*, University of North Carolina Press, 1930. Reviewed in this issue of *The Annals*.

Quite a different picture is obtained by arraying the fine goods classifications. In 1927, the South produced only 24 per cent of woven goods containing rayon as a material of secondary importance; 30 per cent of goods made largely or entirely of rayon; only 13 per cent of the muslins; only 10 per cent of the plushes, velvets, and velveteens; and 40 per cent of reps, poplins, and broadcloths.

Since 1923 the industry has been characterized by two major developments: a territorial shift southward, and a steadily diminishing prosperity for the industry as a whole. The many decades of virtually uninterrupted growth of plant capacity came to an end in 1923. In that year the industry possessed 36,260,000 spindles which were classified as "active." Since that time both active and total spindles have been diminishing, the former at a more rapid rate as indicated by the following table.

Year	Operating Spindles	Decrease in Active Spindles
1924.....	35,849,338	410,993
1925.....	35,032,246	817,092
1926.....	34,750,266	281,980
1927.....	34,409,910	340,356
1928.....	33,569,792	840,118
1929.....	32,417,036	1,152,756

Although the number of spindles for the country as a whole has undergone a violent shrinkage, the number of southern spindles has not in any year failed to show an increase.

It has been authoritatively estimated that of the net increase in southern

Year	Annual Spindle Increases in the South
1923.....	730,812
1924.....	400,848
1925.....	530,396
1926.....	343,800
1927.....	565,500
1928.....	331,692

spindles since 1923, about one half is due to the installation of secondhand spindles from New England. In any case, the South has been gaining about 2,800,000 spindles while the rest of the states have been losing about 5,500,000.

One might logically infer that this marked diminution in the basic equipment of the industry had gone hand in hand with a reduction of output. But such has not been the case. As the number of spindles has become smaller, the activity of each spindle has become greater. The average number of hours worked per spindle is shown for each of the years since 1923 in the following table.

Year	Hours Worked per Spindle
1923.....	2811
1924.....	2353
1925.....	2594
1926.....	2703
1927.....	2892
1928.....	2873
1929.....	3073

In 1929 the average running time per active spindle exceeded that of 1928 by the amazing margin of 200 hours. Measured by Massachusetts standards this is equivalent to a whole month of additional time within the year. Yet this high-speed performance of the country's aggregate spindlage falls considerably short of southern spindle

activity. With 54.9 per cent of the industry's spindles, the South accounted for 68.8 per cent of the total spindle hours in 1929, or approximately 3616 hours of running time per spindle. The difference is mainly due to the greater prevalence of night work in the southern mills. In its special survey of the cotton textile industry in 1928, the Bureau of Labor Statistics found that of 158 mills investigated, 72 were working at night. Of the 23 Massachusetts mills studied, 10 had night shifts; 13 out of 23 South Carolina mills were working at night; 12 of 16 Georgia mills; 5 of 6 Alabama mills; 5 of 15 Rhode Island mills; and 18 of 52 North Carolina mills.¹

THE WAGE SITUATION

The rapid growth of the South, both in equipment and in product, at the expense of other areas has had the effect of creating the general impression that the South is mainly responsible for the relatively low wage levels of the industry. In this connection it is well to point out that wages in the cotton industry have advanced at practically the same rate as in other industries. Professor Paul H. Douglas, of the University of Chicago, has computed the relative hourly earnings of labor in selected industries and for industry as a whole. Five of his indexes are given in the table on page 32.²

The Bureau of Labor Statistics has computed an index number of hourly earnings in cotton mills, using 1913 as a base. This index puts 1928 wages at 218.3 as compared with 100 in 1913. During the war years and for some time after, textile wages were more responsive to the influences making for higher levels than were wages in most other

¹ Bureau of Labor Statistics, *Bull.* 492, Washington.

² Douglas, *Real Wages in the United States*, pp. 102 and 205, New York, 1930.

RELATIVE HOURLY EARNINGS, 1914-1926

Year	Cotton Goods	Iron and Steel	Slaughtering and Meat Packing	Lumber (Sawmills)	All Industry
1914.....	100	100	100	100	100
1916.....	117	124	117	111	110
1918.....	173	194	184	174	153
1920.....	314	250	229	225	218
1922.....	216	172	223	171	192
1924.....	243	216	245	187	216
1926.....	214	214	246	186	225

industries, as the above table strikingly demonstrates.

But the true wage situation in the textile industry is not revealed by the course of money rates per hour of working time. Proper allowance must be made for fluctuations in employment and for wage equivalents not in money form. If the workers in the industry were working full time at the prevailing hourly rates, the actual average weekly earnings per worker for the years mentioned would be as follows:⁴

per cent of full time. More specifically, male picker tenders in that year worked 78 per cent of full time; drawing frame tenders (male) 72 per cent; speeder tenders (male) 73 per cent; frame spinners (female) 73 per cent; doffers (male) 74 per cent; loom fixers 87 per cent; weavers 78 per cent.

Hence, in 1928 male picker tenders on a full time basis would have received as an average \$15.37 weekly. They actually received \$12.01. On the same basis, drawing frame tenders would have received \$15.48 but actually aver-

Year	Average Full Time Hours per Week	Average Earnings per Hour	Average Full Time Earnings per Week
1914.....	56.8	.153	\$ 8.63
1916.....	56.9	.179	10.08
1918.....	56	.267	14.95
1920.....	51.8	.480	24.86
1922.....	52.8	.330	17.42
1924.....	53	.372	19.72
1926.....	53.3	.328	17.48
1928.....	53.4	.324	17.30

In reality, actual weekly incomes will average considerably lower, owing to the great irregularity of the industry's operations. The Bureau of Labor Statistics, in its 1928 survey of 158 mills, found that the great majority of workers were employed only about 75

aged \$11.09. For male speeder tenders the figures are \$19.01 and \$13.91; for female frame spinners, \$14.60 and \$10.65; for loom fixers, \$25.88 and \$22.50; for male weavers, \$20.93 and \$16.32. Clearly, the low wages of the textile industry are due to irregularity of employment as much as to meagerness of rates.

⁴Source of data: *Bureau of Labor Statistics Bull. 492.*

INSTABILITY OF OPERATIONS

The extraordinary instability of operations with which the industry is cursed is due to forces which are in no sense local or regional in origin and hence cannot be ascribed in any important degree to the peculiarities of southern mill practice, as we shall see later. Though pronounced seasonal fluctuations are characteristic of the industry, those of a fortuitous nature are of much greater weight in producing instability.

The South has met with no more success in overcoming the forces of instability than has New England. In fact, her success has been less if 1928 be regarded as a representative year. In that year, New England mills reported on by the Bureau of Labor Statistics were apparently able to provide their workers with more hours of employment than was the case with southern mills. It is of course important here not to confuse the total working time of the mill with the average working time of each employee. Our comparison is concerned only with the latter. The data which follow are for pay periods of two weeks and apply to male weavers.

Let us take, for example, the wages of male weavers in North Carolina and Massachusetts. The average actual earnings in North Carolina per week in 1928 were \$14.59 and in Massachusetts \$18.23. These amounts represent payments only for time actually worked. The difference in pay was \$3.64 per week in favor of the Massachusetts worker. Making allowance for qualifying factors, the Massachusetts worker was on the job an average of 42.2 hours per week, whereas the North Carolina worker was active 39.4 hours per week. If we allocate to the Massachusetts weaver the same working time as the North Carolina worker, his pay would be \$17.03. This would reduce the earnings differential for equal working periods to \$2.44 per week.

As a partial offset to this differential, the most important item is the rent gratuity which southern mills accord their workers. In the mill villages throughout North Carolina, the customary rent is a dollar per room per month—four dollars for a four-room house. Many mills allow free rent during periods of sharp curtailment. The various estimates which have been made of the value of the rent gratuity

	Hours Actually Worked in Pay Period	Hours Constituting Full Time
Massachusetts.....	84.5	96
North Carolina.....	78.8	110
South Carolina.....	75.4	110
Georgia.....	86.9	114

The marked advantage which the South possessed in its lower wage rates and longer working days has been for the most part lost through inability to achieve regularity of operations. This has been particularly true in North and South Carolina, where sixty-five percent, of the southern division of the industry is concentrated.

range from \$1.50 to \$4.36 per week per worker. Mr. Bernard Cone, whose mills are surrounded by villages of a very high standard of comfort and attractiveness, made the following statement as to their wage equivalence:

I have figured that in our case, this item of cheap rent alone means an additional wage of about \$2.50 per week per employee.

Through North Carolina as a whole, I should say it was safe to count this item as \$1.50 to \$2.00 a week extra wages.

If we take Mr. Cone's minimum figure as the one to be regarded as typical and apply it to the wage differential just referred to, it reduces it to 94 cents, bearing in mind that we are basing our argument on similar and reduced working periods for both sections. This residual difference of approximately one dollar is large enough to be of importance for managements making similar products. But as we have seen, the events of the past few years have rendered the great bulk of southern and New England products essentially dissimilar. Though they still fall largely into the same general classifications, the value per yard added in manufacture by the New England mills is decidedly higher. This means that higher skills within the same occupational groups are required by the New England mills. For this skill differential, allowance is nowhere made in the comparative wage statistics. It cannot be computed with exactness, but in all likelihood it goes far toward counterbalancing the dollar differential left after allowance for the rent gratuity.

It is evident that the money wage differential which favored southern management has been sorely whittled down not only by the inability to maintain a 55-hour week, but also by the virtual termination of the period of severe competition with New England. Southern workers are no longer competing on any large scale with New England workers. The latter are no longer making important quantities of osnaburgs, ducks, drills, denims, and so forth. This is not to say that further extension of the industry southward is not to be expected. It will continue, but at a much slower pace than we have recently witnessed, since in the

future it must of necessity involve fine goods which require more elaborate techniques on the part of management, greater skill on the part of workers, and more expensive and delicate machinery.

DEPRESSION IN THE INDUSTRY

Turning our attention to the receding prosperity which has characterized the industry as a whole for the past five years, we shall refer first to its New England and then to its southern aspects. The most conspicuous measure of its severity in New England is the loss of virtually one third of her spindles. The average price of mill shares by the end of 1929 was only about one fifth of the 1923 price. The New Bedford mills have been famous for their profitableness. During the decade 1920-1929 they paid an annual average of \$7.42 per share in dividends, but the rate of payments declined steadily after 1924. In 1929 the payments averaged only slightly more than \$2.00 per share, and 22 mills out of 36 were paying no dividends at all. The aggregate dividends paid by New Bedford mills averaged \$1,258,000 per quarter in 1923. In 1929 the average was about \$240,000 per quarter, a decline of 80 per cent. Fall River mills were paying to their stockholders \$882,000 quarterly in 1923, but only \$221,000 in 1929.

In the South the depression, though severe, has been less destructive than in New England. Dividend changes since 1926 have been more often downward than upward, and beginning in 1928 the percentage of non-dividend-paying mills rapidly increased. It is doubtful if more than one half of the southern mills were paying dividends on common stock by the end of 1929. Bankruptcy sales have been frequent, and many mills have escaped the auction block only by being "taken over"

by their selling houses. As in New England, the course of textile security prices has been steadily downward. According to the index computed by R. S. Dickson & Company, the average price of twenty-five representative mill shares declined from \$144.50 per share in 1923 to \$71.48 per share in July, 1930, a shrinkage of \$73.08 per share. Practically all of this decline had occurred before the New York stock market crash in 1929.

To the financial evidences of depression may be added the spectacle of violent fluctuations in physical output and in employment. Since 1923, a few months of intense production activity have invariably been followed by drastic curtailment, in which the profits of the preceding period have been counterbalanced by losses.

EXPANSION DESPITE DEPRESSION

Yet the situation has not been without its paradoxes to puzzle the mind of the inquirer. It has not been generally understood how a condition of chronic business loss could be reconciled with steadily expanding material equipment, an enlarged output, and a tremendous increase in the activity of each spindle, as indicated by data which we have already presented.

The annual increases of plant equipment which have been installed in the South regardless of the lack of prosperity are due partly to the high degree of specialization which prevails among the mills. So numerous and so varied are the products of the industry, and so kaleidoscopic is the character of consumption demand, that the forces of depression never attack evenly. However unfavorable the general market situation, there are always certain types of products whose behavior is opposed to that of the mass. It is characteristic of the industry that these scattered opportunities for profit-

able operation are more likely to lead to new plants and equipment than to readjustment of existing establishments.

It is also true that plants which are successful as a result of exceptionally competent management will often prefer to enlarge their operations by new construction and installation rather than purchase existing plants, even though the latter are being offered at bargain prices. For these reasons, however high the mortality rate of the industry, the birth rate can never fall very far behind.

Another influence making for southern expansion is the wide disparity in operating costs between the upper tier of southern states and those which constitute the deep South. These cost differences are of such a character as to be effective only in the manufacture of coarse products, but they have undoubtedly led to the establishment of many plants whose only chance for profits lay in underselling. Enterprises of this character are in no way discouraged by an already existing overcapacity in the industry as a whole. There is to be taken into account also, as a force making for expansion, the great hunger for industry which always pervades those communities whose inhabitants earn a precarious livelihood from a faltering agriculture. Pay rolls and local business activity are the chief desiderata rather than the net profits of the specific undertaking which is to bring them about. Throughout the South are many communities in the throes of such an urge, and they turn automatically to textile manufacture as the one industry which is best suited to lack of previous experience, limited business skill, and meager capital.

As regards the paradox of greater activity per spindle in the face of declining profits, it is to be explained by

greater resort to night work in the attempt to cut down expenses. To the individual mill management, cost reduction in times of adversity is a matter of greater urgency than is market price. About the latter, there is nothing he can do but acquiesce. As it declines, his only salvation lies in a compensatory reduction of expense per unit of output. He may be aware of the lack of logic in accelerating the flow of goods to an already overburdened market, but as an individual he has no alternative that is more logical. So it happens that in the textile industry, most of the physical manifestations of prosperity, such as increased plant, larger output, and more intense operation of machinery, are likewise inevitably present as concomitants of depression.

ADVERSE FORCES

In the discussion so far we have listed certain manifestations of territorial and economic change in the industry and have referred to certain influences of a secondary character which have served to intensify and prolong the tendency to depression. We shall now turn our attention to those forces of a more basic character in which is to be found the ultimate responsibility for the industry's ills. The adverse effects of each one are largely due to its conjuncture with the others. They are to be separated only for purposes of description. Final evaluation must assume their presence as a composite.

They consist of the wide and frequent gyrations in the price of raw cotton, a broader and more rapid application of fashion influences to cotton goods, and the changed character of cotton goods merchandising. Retaining as it has the disjointed structure and the individualistic methods of fifty years, the industry has been unable to cope with these new and powerful

intruders. To understand the chaos which they have wrought, it is necessary first to view the industry's structure. It is still an industry whose manufacturing units are small, widely scattered, and numerous. Ownership and management are mostly in the hands of local interests. Very rarely does a single enterprise do more than a fractional part of the processing required to convert raw cotton into a finished usable product. There is instead a series of specialists, the output of one constituting the raw material of the next.

Many mills, approximately one fourth, are exclusively spinning mills. Most of the cloth mills do some spinning, a few of them make practically all of their required yarns, and still others produce an excess of yarns which they dispose of in the market. The buying and selling of yarns is accomplished through the agency of yarn merchants. Where buyers and sellers are so numerous, such an arrangement is necessary to procure instantaneous execution of orders, and to provide even terms for all parties.

Theoretically, the price of yarn should reveal the true relationship between supply and demand, and so serve as a guide to mill operations. In actual practice, its function of maintaining an even flow of goods is largely frustrated by speculative, and sometimes unethical, operations. No one questions the value of speculative operations in so far as they are a necessary adjunct to hedging. But in the yarn markets they extend far beyond any such laudable purpose. There we find speculative buying of yarns by merchants, mills, and outsiders, always attendant upon rising cotton prices. Hence, the curious result of stimulated yarn supply from cotton scarcity.

At other times, yarn merchants will

sell short in anticipation of being able to force mills to accept orders at a lower price. It is not uncommon for merchants to accumulate orders on their books temporarily rather than pass them on to the mills, hoping thereby to gain a subsequent buying advantage. Thus the yarn market as a whole, instead of exclusively reflecting consumption demand and actual supply, at times becomes an active agent in the concealment of the relationship, and so joins with a number of other influences in producing chaos where there should be order.

THE CONVERTERS

A majority of the cloth mills are not equipped to do their own finishing, and so sell their products as "grey goods." Finishing, which includes such processes as bleaching, dyeing, and printing, is therefore in the hands of another group of specialists. But between the actual finishers and the cloth mills is still another group called the converters. The converters purchase grey goods or semifinished goods from the mills or commission merchants, determine the style characteristics to be imparted to them, and have the finishers do the actual processing on a price-per-yard basis.

The converter is the stylist of the industry. He employs designers who are constantly at work on new patterns, colors, and fabric constructions. In anticipation of the changing fashions for an approaching season, he submits his new designs or patterns to the trade and solicits orders. Upon receiving the orders, he supplies the finishers with the base materials to be processed according to specification. If he buys the base materials in advance, he assumes a speculative risk. If he ventures to have materials finished ahead of the receipt of orders in expectation that certain designs or patterns are

bound to be popular, his position becomes still more speculative. If he delays all contracts until receipt of orders, he runs the risk of finding the mills and the finishers unable to take care of his needs on such short notice. What he actually does is a matter of his individual courage, capital, and acumen. In any case, the converter cannot be regarded as a stabilizing influence. The chances are all in favor of his intensifying whatever happens to be the tendency of the moment. If the grey goods market happens to be depressed he will naturally delay his purchases to the last minute, to the manifest disadvantage of the cloth mills. On the other hand, if the cloth market is strong and the outlook is for higher prices, he will place his orders well in advance and insist upon early deliveries, thus stimulating still further the tendency toward overstocking which such a situation always produces.

THE COMMISSION MERCHANTS

In their purchase of grey goods, the converters do not ordinarily deal directly with the manufacturing units, but purchase through the agency of commission merchants. Thus between converters and mills is essentially the same kind of open market arrangement as exists between spinners and weavers. The cloth merchants handle both finished and unfinished goods. Purchasing the converter's raw materials for him, they likewise sell for him his finished products.

But into the primary cloth markets, of which the commission merchants are the foundation and much of the superstructure, come not only the converters but also the wholesalers who buy and sell on their own account; the garment manufacturers; the great retail buying organizations, such as the department stores, the chain stores, and the cooperative buying associations; interior

decorators; and industrial consumers, such as automobile body manufacturers, furniture manufacturers, and those who use fabrics either as raw material or as container material.

Under modern conditions these buyers are powerful, shrewd, highly discriminating, and ruthless in their exactions. Yet the average cloth manufacturer never comes in touch with them. Except in a few cases, involving the largest mills, he is satisfied merely to turn over his entire selling accounts and selling responsibility to a selected commission merchant. It is not unusual for a merchant to represent at the same time fifteen or twenty competing mills, and several of the largest commission houses represent from fifty to seventy-five mills.

The prices at which the goods are to be sold are theoretically fixed by the mill; but in practice, the goods move at prices recommended by the selling agent.

The commission merchant as selling agent is essentially a trader. In the very nature of the case, his prime motivation as a selling agent cannot be concerned over the long-time profits of his many client mills. His major concern is with the immediate activity of the market—his volume of sales. Both his income and his standing in the market are conditioned upon one thing—moving the goods. A fluctuation of one cent a yard, which may mean the difference between profit and loss for the mill, is a matter of relative indifference to the merchant.

As a proposition in ethics, the commission merchant of course dislikes a development which is not favorable to his mills; as a matter of business, he must pursue a policy which produces an income for himself and orders for his mills. If, as an individual, he attempted a different policy and proceeded to hold out for better prices

from buyers and more conservative production schedules on the part of mills, he would quickly get for his pains a loss both of buying and selling customers and a speedy disintegration of his business. His only other alternative is to go with the market and become an indistinguishable part of the daily whirligig.

This alternative is frequently made more urgent by the fact that many mills look to their selling agents for their financing. Goods are sold commonly on a sixty-day credit basis. The mills themselves cannot bear the burden of such credit extensions. Commission merchants serve as a stop-gap, making the necessary money advances to the mills (with an interest charge) and subtracting the loans from the subsequent collections. At times of slack orders, commission merchants also loan to mills against the security of goods held in stock.

RESULTS OF CREDIT PRACTICES

As a result of these credit practices, mills are almost continually in debt to the selling houses. In the light of its ultimate economic consequences, a more vicious method of financing could hardly be devised. It has the twofold effect of putting the mills in a position where they must sell goods regardless of cost in order to meet bills payable, and putting the merchants in a position where they must insist on such action for their own protection.

At a time of market depression in the industry, when the mills are selling output at cost or below, the necessary advances from the commission houses will approximate a hundred per cent of the selling value of the goods. This destroys the last vestige of market independence which the mills possess, and prolongs and deepens the depression. The final sequel is a status of hopeless insolvency on the part of the

weaker mills. Many of them are quietly taken over by the commission houses and continued in operation so long as the sales commissions exceed manufacturing losses. Perhaps they are nursed back into solvency; perhaps they are dropped upon the bankruptcy courts. Many mills are in such uncertain status at the present time.

Somewhat beyond the commission merchant in the sequence of processes is the wholesaler or jobber. His importance in textile distribution has waned in late years; but at the present time he appears to be holding his own. He differs from the commission man in that he buys goods outright and sells from his own stock.

The wholesalers' loss of prestige has come from the recent rapid growth in chain stores, from the formation of buyers' syndicates, and the increasing size of department stores, mail order houses, and garment manufacturers. As the buying units have become larger and stronger, their tendency has been to brush aside the wholesalers and to approach the commission merchants and the larger mills directly. This has radically changed the entire aspect of textile goods bargaining. Faced by so formidable an array of buyers who are thoroughly conversant with the weaknesses of the sellers, the commission merchants are neither in the mood nor in the position to resist effectively. They can only pass back to the mills the price ideas of the buyers, and in the present disorganized state of the mills the buyers' price usually prevails.

Such, in the main, is the organization of the cotton textile industry. Its many component atoms, widely scattered, and varied in function, achieve coordination, such as it is, through indirection and conflict.

Adjustments in price, type of product, total output, and stocks on hand can be effected with reasonable exact-

ness and promptness only when the disturbing influence are mild in character and slow-moving. But the industry has come to be harassed by influences which are anything but mild and slow-moving. Together, they constitute a perfect carnival of violence and unrestraint.

COTTON PRICE FLUCTUATIONS

A spectacular example is found in the wild gyrations of the cotton market. In 1920-1921 the range was from ten cents to forty cents a pound. In 1926-1927 the range was from eleven cents to twenty-five cents a pound. It has become customary to expect the high price of any year to be from forty to fifty per cent greater than its low price, and no surprise is entertained if this range happens to be doubled.

Before the war, fluctuations, measured percentually, were not half so great as they have been since. In the period 1905-1913 the mean deviation of monthly cotton prices from the average was only about ten per cent. For the nine-year period 1920-1928 the corresponding figure is about twenty-five per cent, and this was closely approached in every year except one. It is evident that cotton price fluctuations have a disturbing influence more than twice as great as they commonly exercised prior to the war.

The more rapid and violent the fluctuations in the price of cotton, the greater is the difficulty in adjusting proportionally the prices of goods. Trading risks therefore become much greater. A certain degree of protection is afforded the mills and the converters by recourse to "hedging," but it is not great enough to insure against loss. Great technical skill is required for complete success in hedging operations, and many mills hesitate to make habitual use of them. The inadequacy of the device is well evidenced by

the fact that a pronounced decline in the price of cotton invariably diminishes profit margins of most mills during the period of decline; whereas a pronounced rise in the price of cotton invariably increases mill profits for a portion of the period.

A still greater evil resulting from cotton price fluctuations is the high degree of irregularity which they impart to production operations of the mills. If cotton prices begin to rise in anticipation of a relatively small crop, orders for goods at once increase in volume. Retail buyers, industrial consumers, garment manufacturers, converters, and wholesalers hasten to provide for their requirements before prices rise further. The easy inflow of orders without solicitation or price higgling works like a tonic on the mills. They scramble madly to place more contracts for raw cotton. Production schedules are hurried up. Night shifts are thrown into operation. The increased mill activity gives cotton prices another fillip, and the contagion of forward buying spreads still farther, with the mills disposed to manufacture to stock if orders are not adequate to take all output at desired prices.

During this artificial tempest, nothing at all is happening in the actual consumption area. If anything, the higher prices of goods discourage the ultimate consumer into the purchase of less clothing or the use of substitute fabrics. This fact finally dawns upon the various divisions of the industry after shelves and warehouses have become loaded with goods which are not moving. The aftermath of depression is likely to be of longer duration than the period of prosperity, since a readjustment downward is not so easy as the expansion upward. Many mills will not curtail until losses from continued operations become as great as the losses from complete stoppage.

The violence of production fluctuations, whether they originate in the cotton market or from some other cause, is much intensified by the prevalence of night work in the southern division of the industry. Night work is the major elastic element in production capacity. At least fifty per cent of the mills either work at night habitually or are prepared to inaugurate night operations on short notice. This accounts largely for the hair-trigger action of the industry in responding to slightly improved demand and also explains the speedy manner in which market shortages are converted into surpluses.

STYLE CHANGES

Not less pronounced than the gyrations of raw cotton, and perhaps even more disturbing to the industry, have been the fashion changes of recent years. These changes have not been of such a character as to reduce total consumption, but have done their damage by continually forcing changes in the composition of output. It is a mistake to associate the concept of style changes with apparel goods only. Virtually all fabric constructions are now subject to style changes. Denims, gingham, and osnaburghs are highly susceptible. Overalls, draperies, flour bags, furniture and automobile upholstery, curtain materials, and even sheets and bedspreads have all become extremely sensitive to shifting modes.

Before the war, probably eighty per cent of the output of textile goods was rigidly staple. The other twenty per cent went through its transitions slowly. The upper strata of the population adopted the new modes in one season; they were gradually welcomed by the masses the following season, and probably did not reach the height of their popularity until the third year. The slowest of the mills and converters

were able to make adjustments easily and without misgivings.

But these progressions are no longer gradual. The population of every hamlet keeps fairly abreast of the elite of Fifth Avenue. Moreover, into the picture of style changes has come the characteristic of the ensemble. It involves many elements. Everything that enters into the making of a complete costume—outerwear, underwear, hosiery, hat, shoes, and handbag—is simultaneously touched by the new mode. An equally complete transformation is wrought by a new idea in household furnishings, be it for drawing-room or kitchen.

So it happened that the portion of its product which the industry has been pleased to call its staples has been sorely whittled down, so that it is now virtually negligible and no longer constitutes an adequate reliance for off-season operations.

Since the disturbing influences of style changes are directed toward the type and the design of goods, the danger to mill, converter, jobber, and garment manufacturer lies in the imminent possibility that his chosen design or construction may become unpopular—that a sudden change in public taste may leave him with large stocks of unsold and unsalable goods.

The seasonal nature of the business accentuates these hazards, as it necessitates manufacture and purchase of goods farther in advance than would otherwise be the case, and at the same time increases the danger of a carry-over.

No device has been found which effectually reduces the sum total of risk involved in the treacherous whims of fashion. The industry annually suffers from this source a loss running into many millions. Each specialist in the industry resorts to every ingenuity to reduce his particular risk, but it can

be done only by transferring it to some one else. The retail buyers meet the problem by delaying orders for style goods as long as possible and then insisting on rush deliveries. The converter does the same thing in his purchases of grey goods, unless the cotton market dictates otherwise, and then at the last minute crowds the finishers.

As the various types of retailers, distributors, processors, and garment manufacturers seek to escape risk in this manner, they add proportionally to the burdens of the mills. Here, the large capital invested and the maintenance of the labor force require regularity of output if operations are to be efficient and profitable. If such regularity is attained, it means indebtedness and possible overproduction.

The problems incident to style changes are not then being met coöperatively by the various factors which compose the industry. Instead of unity of effort, we find cross-purposes and antagonism. There is surely something wrong with the organization of an industry which forces this ruthless competition between groups which perform different functions!

Effort at more efficient management on the part of individual enterprises can avail but little in the way of permanent improvement so long as the present organization of the industry remains intact. The individual who gains in efficiency will profit only so long as he remains a rarity. Adoption of more efficient methods by the majority of enterprises would merely put competition on a lower price level. The savings from lower costs would eventually be translated into nothing more than lower prices. By the same token the utilization of cheaper labor is only of transient advantage. It merely sets in motion a series of new influences which tends to make all wages lower

without profiting those who have brought it about.

VERTICAL COMBINATION RECOMMENDED

A more hopeful departure is for the individual enterprise to bring within its own control the entire sequence of functions which the industry performs. The Pepperell Mills, the Pacific Mills, the Cannon Mills, and the Cone Mills are units which do much or all of their own converting and selling, with gratifying results. Of course, they do not escape entirely the adverse influences originating within the unintegrated portions of the industry, since they must sell in competition with units which use the conventional methods.

Moreover, the example which they have set cannot be followed by a majority of the mills, owing to smallness of output and lack of capital. The converting and selling functions can be successfully performed only in connection with great variety and volume.

If integration of functions is ever to be realized, therefore, it apparently must come through the agency of combination. Little or nothing would be gained by a combination of spinners only, unless it approached the monopoly point, which would be clearly undesirable. Likewise, nothing would be gained for the industry as a whole by a combination of weavers if the combination continued to buy its yarns in a competitive market and to dispose of its products as grey goods. Combination, to produce stability and efficiency, must embrace all the functions

which extend from the purchase of raw cotton to the final disposal of finished product to large retailers, garment manufacturers, industrial consumers, and other large-scale users.

This is not to imply that the entire industry must be carved up into a few gigantic units. It is likely that the integration process could achieve the desired ends if it included no more than half of the industry's output. Through superior production and inventory policies, a readier and more accurate adjustment to style changes, a more competent corps of stylists and designers for the inauguration of novelty lines, and the greater volume of good will attendant upon wider and more direct distribution, properly integrated units could speedily set new standards for the industry. The extent of accomplishment by such methods has been amply demonstrated in the experience of the iron and steel and the automobile industries.

Of course, the price of raw cotton could not be brought under control; neither would there be the power nor the disposition to hamper the course of style changes. But the economic evils resulting therefrom could be minimized by vertical integration within the industry. There would be virtual elimination of the series of speculation centers which the industry houses, and which are the chief enticers to periodical overproduction. And so would cease to exist the market warfare between presumably coöperating groups, over which the industry now wastes so much of its energy and its substance.

Tobacco Manufacturing in the South

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THE manufacture of tobacco has always been closely associated with the economic development of the South. Small quantities of several of the tobacco products are made outside the South, and some of the products are not made on any scale in the South. Yet, the industry is a southern one, and forces are now at work which may have the effect of concentrating it still more in the South in the future.

In 1927 the tobacco manufacturing industry ranked fourteenth, with respect to the value of the product, among the manufacturing industries of the United States, and third among the industries of the South. It also ranked fourteenth among the industries of the United States in the number of wage earners employed and in the amount of wages paid. Approximately thirty-five per cent of the wage earners of the tobacco industry were in the South. Based on the value of the product, the South had about fifty-four per cent of the output of the United States. In 1927 and 1928 southern tobacco factories consumed about sixty-four per cent of all of the stemmed and unstemmed leaf used in the country. In 1919¹ the investment of capital in southern tobacco manufacturing represented forty per cent of the total for the country for that industry.

DEVELOPMENT OF TOBACCO MANUFACTURING

The tobacco manufacturing industry did not show much activity until

¹ Where figures for 1919 have been used in this article, complete figures for later years are not available.

shortly before 1860; and in its present characteristics it has developed since 1880, about which time machine methods were introduced into the manufacture of cigarettes.

Between 1775 and 1850 the tobacco growing and manufacturing industries were not prosperous and remained practically stationary because of disturbed political conditions in Europe and the commercial and financial policies incident to those conditions, and because of the greater profitability of growing cotton after 1793.

About 1850 there was a revival in the industry. Population and prosperity had increased. Consumption was also stimulated by improvements in the quality and the appearance of the leaf, due in part to new methods of curing. The year 1852 marks the accidental discovery of the bright yellow tobacco of North Carolina, which is now the chief tobacco used in the manufacture of cigarettes. In that year, Eli and Elisha Slade, of Caswell County, North Carolina, cured some tobacco by chance by fire and found that a bright yellow leaf resulted instead of the dark brown one that results from exposure to sun and air. Flue-curing by fire then became a widespread practice. It was found that all tobacco would not cure with this color. It was confined to a type grown in sandy, siliceous soils in the region of Caswell and Durham and adjoining counties.²

During the Civil War the soldiers of both armies around Durham took a liking to this bright yellow leaf. They

² Jenkins, J. W., *James B. Duke, Master Builder*, p. 62.

carried it away with them to different parts of the country. Its reputation was thus established and orders started to come in. Its manufacture had been started in Durham in 1858. The factory was still operating at the end of the war, but at that time it was raided by soldiers and nearly ruined. The chief tobacco manufactures at this time were pipe and chewing tobaccos, the former being the chief form consumed.

THE DUKE ORGANIZATION

Immediately after the Civil War and due largely to the hard times growing out of it, the Duke family entered the industry. Washington Duke, the father, was the originator and founder of the enterprise, but it remained for his son, James B. Duke, who was only nine years of age at the end of the war, to bring the tobacco industry to the state which it has attained. Before he was twenty-one years of age, he was general manager of the Duke interests. He gained his fame in a branch of the industry which did not exist in this country at the time of the Civil War—the manufacture of cigarettes.³

The Dukes among others began to manufacture smoking and chewing tobacco in a small way by hand and at first peddled and sold all of their own products. The first factories were on the farms. As the demand increased, factories were built in Durham, and in a short time the surrounding territory could not supply enough leaf for the factories. Warehouses were then built and the farmers from farther away were induced to bring in their tobacco, where it was sold at auction.

But other factories were more firmly intrenched and James Duke sought a

field in which his firm could be the leading one. He decided to go into the cigarette business. Although cigarettes were an important part of the tobacco trade, they were not made in Durham until 1881. The bright yellow tobacco of North Carolina was particularly adapted to cigarettes. Even in this field Duke found competition, and he had a long hard fight in reaching the top. He first got the advantage of other companies by introducing the cigarette machine and working with it until it was made successful.⁴ This move reduced the cost of cigarettes from eighty cents to thirty cents per thousand.

At the same time Mr. Duke inaugurated a world-wide selling campaign, because the new machines could make more than could then be sold. He succeeded in capturing markets while his competitors were timid. The same thing can be said regarding the introduction of the cigarette machine. He placed himself in a position to get the benefits of large-scale production and to get the major part of the tobacco trade. All of this was not attained without encountering stiff competition. But Duke went ahead with his plans and inaugurated policies which drove his competitors from the field or forced them to unite with him, until in 1889 his company was producing nearly one half of the cigarettes in the United States.

Price wars in the late eighties led to the formation of the American Tobacco Company in 1890. The Duke organization was gradually enlarged and divided until it included the manufacture of every type of tobacco and culminated in 1904 in the tobacco

³ Cigarettes were introduced into the United States in 1887 from England. By 1880 they had become an important part of the tobacco industry.

⁴ The first cigarettes in this country were rolled by hand by Russians who were imported for the purpose. In Russia, cigarette-making was a government monopoly and its secrets were closely guarded. One roller could make as many as 2,500 per day. See Jenkins, *op. cit.*, p. 66.

trust, a world-wide combination, which was ordered dissolved by a decision of the United States Supreme Court in 1911.⁵ During the succeeding few years this dissolution was accomplished. The American Tobacco Company⁶ as it then stood was broken up into the important companies which dominate the industry at present.

RECENT TRENDS

Since the dissolution of the trust, the history of the industry has been that of the gradual expansion of the dominant companies and the keen competition among them for markets. Once in a while a new company is organized, but it is difficult for it to operate in face of the competition which those with large factories and well-established brands can offer. The advertising expense of the larger companies is enormous, but advertising seems to be about the only way in which markets can be established or expanded.

The most outstanding development of the industry in recent years has been the enormous increase in the production of cigarettes. This can be attributed to several factors. First can be mentioned the effect of the World War. Then came the women smokers. The annual increment of new smokers also seem to prefer the cigarette. The work of reformers and the prejudice against the cigarette have waned. Consumption has increased in foreign countries as well as in the United States.

It is also a fact worthy of note that

⁵ Mr. Duke always claimed that monopoly was not his aim in building up the tobacco trust. He said it was formed to get a better organization, more capital, and better ability. Getting able men into his organization was a strong point with Mr. Duke. He said that he bought other firms as investments, not to get rid of competition.

⁶ The present American Tobacco Company and the one organized in 1890 were parts of the company by the same name organized in 1904 and known as the tobacco trust.

the cigarette did not become popular until its manufacturers began to blend domestic and imported tobaccos. The preference for the cigarette seems to lie in its convenience and its cheapness. It is the type of smoke that one would associate with the fast industrial and commercial life which prevails in the United States. The present importance of the cigarette can be shown by the fact that in 1928 the internal revenue tax on cigarettes represented 78.71 per cent of all such taxes collected on tobacco by the Federal Government.

LOCATION OF FACTORIES

As a general rule, tobacco factories are found in the larger industrial centers that are located in or near the regions where tobacco is grown. It is relatively cheaper to ship the manufactured product than to ship the unmanufactured leaf. In the South, these industrial centers have the added advantage of being close to poor farming sections, from which a large supply of cheap labor has been attracted.

The work of the tobacco trust and the advantages to be gained from large-scale production also are factors in the concentration of factories in certain places. When the trust controlled the industry, it was organized and located so as to give the greatest efficiency possible. Certain factories specialized on certain of the products, and the output of the factories grew with the increase in demand for the products.

Under the trust, then, many of the factories attained a large size. When the trust was dissolved, the resulting companies were large. When added production was needed it was easier for these companies to increase their output than it was for entirely new companies to enter the field. The existing companies are thus enlarged and the industry tends more and more to be concentrated in a few places.

Even if a new manufacturer were to enter the field, it would be better for him to locate where there were other factories making the same product. He would have advantages in securing labor and raw material, and in marketing, which he could not obtain in a place where such manufactures did not exist. The industry seems to be pretty well stabilized around its present centers, and, unless the tobacco habits of consumers change, it will probably be established permanently in these places.

TABLE I—JANUARY 1, 1929⁷

State	Factories Making		
	Manu- factured Tobacco	Cigars	Ciga- rettes
North Carolina.....	14	17	7
Virginia.....	14	42	8
Missouri.....	18	189	2
Kentucky.....	42	65	3
Tennessee.....	20	31	..
Louisiana.....	56	48	1
Florida.....	12	304	2
Maryland.....	6	96	1
Texas.....	7	40	..
Georgia.....	2	53	2
Alabama.....	..	29	..
South Carolina.....	1	9	..
West Virginia.....	8	44	1
Mississippi.....	..	2	..
Arkansas.....	2	8	..
Oklahoma.....	..	11	..
Total.....	202	975	27
Per cent of U. S. Total.....	16.2	12.9	20.3

RELATIVE IMPORTANCE OF DIFFERENT SECTIONS

The number of factories in a state is no indication of its importance as a

⁷ These are figures of the Internal Revenue Bureau. There are duplications because some factories make more than one product and separate reports are required for each product.

manufacturer of tobacco. Of chief importance is the size of the plants. Thus, North Carolina, the leading tobacco manufacturing state by far, has fewer factories than most of the other important states in the industry. The product that is made is an important influence in determining the number and the size of the factories. In 1927 North Carolina produced thirty-five per cent in value of the tobacco manufactures of the country and about two thirds of those of the South. Virginia ranked second for the Southern states, with about twenty per cent of the production in value of those states. Florida was next, with six per cent. Kentucky and Missouri came next, in the order named.

In 1927 North Carolina stood first in leaf consumption, with thirty-seven per cent of the total for the country and sixty per cent of the total for the South. Virginia stood second, with eleven per cent and eighteen per cent respectively. Kentucky and Missouri combined used about as much as Virginia.

In 1919 the South had forty per cent of the total capital invested in tobacco manufacturing in the United States. North Carolina lead in the amount of invested capital, with twenty-one per cent of the total for the country. That state had fifteen per cent of the total capital invested in chewing, smoking, and snuff plants, and twenty-four per cent of that invested in cigar and cigarette plants combined. Practically all of it was in cigarette plants. Virginia had eight per cent and six per cent respectively. Kentucky had eleven per cent of the total, in chewing, smoking, and snuff plants. Florida had five per cent of the total invested in cigar factories.

The importance of North Carolina and Virginia is also shown in the collection of internal revenue taxes on tobacco. In 1927 North Carolina paid

51.5 per cent and Virginia 15.5 per cent of all such taxes paid in the country. For 1928 the figures were 53.8 per cent and 15.4 per cent respectively.

The main centers of manufacture at present are: Durham, Winston-Salem, Reidsville, Richmond, Baltimore, Louisville, St. Louis, Tampa, and Clarksville. Figures for the production in most of these cities are not available.

The center of tobacco growing, and thus of manufacture, has shifted several times in the past. First it was in Virginia with Richmond as the chief center. Then, with the depletion of soil fertility in Virginia and the breakdown of slavery with resulting loss of capital and labor, it moved to western Kentucky, where agriculture was less dependent on slave labor. The manufacturing centers here were Louisville and St. Louis. Now, with the great increase in cigarette consumption and the adaptability of the tobacco grown in North Carolina to that use, Durham, Winston-Salem, and Reidsville have become important manufacturing centers.

The older centers are still important and Richmond is growing in this respect; but so long as the cigarette remains in favor, the North Carolina cities will probably remain the most important centers. Richmond is well located with respect to supplies of raw material and markets. It is an important cigarette center and is the leading cigar center in the South since the advent of the cheap cigar and the use of machinery in its manufacture.

CLASS OF LABOR

The tobacco manufacturing industry of the South utilizes for the most part a cheap, unskilled, and uneducated type of labor that has been recruited largely from poor farming regions near the centers where the factories are

located. At one time these farming regions contained many, both white and Negro, who lived a more or less self-sufficient existence at a low standard of living. Such people welcomed the chance to work in factories, where, even with low wages, they could earn enough to live better than they did on the farms. There were fairly large numbers of these people. Consequently, the wages were low. A large part of this poor farming population has been drained out by the tobacco and other industries, so not as much dependence can be placed on this source of labor in the future as formerly. However, there is generally a floating supply of this type of labor around most industrial centers, so it is not difficult to keep the factories supplied.

The cigar industry utilizes a type of labor that is probably a little above the average found in the cigarette and manufactured tobacco divisions. But with the introduction of machinery into that industry, this difference will probably disappear.

All kinds of workers except children are employed in the industry. Not much child labor is to be found. In 1919 the tobacco manufacturing industries of the United States employed 157,097 workers. Of this number the cigar industry employed about seventy-three per cent, the cigarette industry about fourteen per cent, and the manufactured tobacco division most of the remainder. In this latter division about fifty per cent were women workers; in the other two combined, about sixty per cent. In the manufacture of cigars and cigarettes the South had about twenty-seven per cent of all of the workers engaged, and in the manufactured tobacco division about fifty per cent. The South had thirty-one per cent of all of the workers in the tobacco industry.

The cigar industry is the chief em-

ployer of women as laborers. In Florida, however, sixty-three per cent of the tobacco workers were men. In Virginia four fifths of the tobacco workers were women. In North Carolina it was sixty-one per cent and in Kentucky sixty-three per cent. For the entire industry of the United States the majority of the workers are women. The same is true of the South.⁸

A great deal of Negro labor is employed in the South. The Negroes generally do the work in the early stages of manufacture, such as stemming, packing, and blending. A great deal of this work is done by hand and requires but little skill. In 1919 about thirteen per cent of the workers in tobacco manufacturing were Negroes. Most of them were employed in the cigarette centers.

WORKING CONDITIONS

The work in tobacco factories is not heavy but it requires close attention and is monotonous, confining, and unwholesome. Conditions differ, of course, in different divisions of the industry and in the different departments of a factory. Where the machines are making and packing the finished product, the rooms are clean and there does not seem to be much tobacco dust in the air. Yet, the workers have an unhealthy, emaciated appearance. Most of the work is done in a standing position.

Working conditions are worse in the departments which take the tobacco through the preliminary stages, especially where the leaves are packed in hogsheads. There is a great deal of tobacco dust in this department. This dust burns the membranes of the nose and the eyes. In certain of the opera-

tions some of the workers wear masks over the nose. This work is done largely by Negroes.

The unhealthful nature of the work is inherent in the industry and cannot be blamed to any extent against the factory owners. Certain processes must be performed, and better ways of doing them have not been discovered. But the tobacco industry is dangerous to health, and many of its workers die from tuberculosis.

The hours of work vary for different regions, but most factories fall within a group operating from forty-eight to fifty-four hours per week, with most factories approaching the higher figure.

ORGANIZATION OF THE INDUSTRY

Since the dissolution of the tobacco trust, three or possibly four large corporations have dominated the industry. The different companies own several factories each, the factories being located near the important markets or near the regions which grow a large volume of tobacco leaf. At present there seems to be a tendency for a greater concentration of manufacturing activities near the sources of raw material.

Most of these companies manufacture all tobacco products except large cigars and snuff. In one case, however, there is the ownership of a controlling interest in a large cigar company by one of these large companies. Several of the companies also own or have a controlling interest in companies that furnish some of the materials other than tobacco that are used by the industry. One company owns a paper mill in France which furnishes all of its cigarette paper requirements. It also owns a mill which makes the tin products which it requires, and a textile mill making tobacco bags, paper labels, and pure silk hosiery. It probably had to add this last product in order to keep

⁸ In New Jersey 80 per cent of the workers were women and in Pennsylvania 64 per cent. The introduction of machinery into the cigar industry may change the number of women workers.

the mill running at a profit. This company is also interested in a tobacco retailing organization. Tobacco companies also have interests in companies making paper boxes in which their products are packed for shipment. One of the large companies has a subsidiary cigarette company located in China.

In addition to the above, the large companies each have a large number of warehouses in which the tobacco leaf is stored to age, as well as leaf-handling plants, in all of the districts from which they purchase leaf. The manufacturing industries are generally so localized that not all of the tobacco growers in a region can market their tobacco in the centers where the factories are located. Consequently, the manufacturers have to have plants to handle the leaf which is purchased in these more distant districts.

All of the tobacco leaf markets also have warehouses in which the farmer displays his leaf for sale. North Carolina, which has produced a little over one third of all the tobacco grown in the country for several years past, has forty-four tobacco markets, in which there are about a hundred and fifty warehouses. Wilson, North Carolina, has the distinction of having the world's greatest leaf market.

SPECIALIZED PRODUCTION

The tobacco factories of each company tend to specialize on the product to which the leaf in their respective regions is adapted, or, in some cases, the product which the market demands, where they are located. Ordinarily a factory makes two or more products. Generally a factory will be composed of several buildings with different departments housed in separate buildings, or one building may contain more than one department. In some cases tobacco for different uses

requires the same treatment up to a certain stage. This can all be done in one department. From that point the tobacco goes to the special departments that make particular products. In a tobacco factory great use is made of the force of gravity. The work starts on the upper floors and works progressively toward the lower floors.

The country's production of snuff is made by a few companies with plants that are for the most part near the regions of consumption. Those in Tennessee, however, are near a supply of raw material. The chief consumers of snuff are the mill workers of New England and of the South, and the Scandinavians in the northwestern part of the country.

Small cigars have long been made by machinery, but it is only during the last four or five years that machinery has been perfected to make large cigars successfully. A large part of them are still made by hand. But the introduction of machinery is changing the organization of the industry. The manufacture of cigars has always tended to follow the market, and the industry has in the past been conducted in small shops with cheap labor, in the large cities; but machinery is crowding out the small producer and placing the industry more and more in the control of the large establishments which have the capital for installing efficient machinery and which are more efficient because of the economies of large-scale production.

Cigar production is lower than it was ten years ago, but the production of the larger concerns has been increasing. Since 1920 the number of factories with an output of 20,000,000 cigars or less per year has decreased, the greater increase being among the smaller plants. During the same period the number of factories making over 20,000,000 per year has increased

and the greatest increase has been among factories making over 40,000,000. In 1921, plants with production of over 40,000,000 made eleven per cent of the total production of the country; in 1927, they made thirty-three per cent. The number of cigar factories decreased from 14,578 in 1921 to 9,312 in 1927.

Another factor in the cigar industry is the increasing preference for the cheaper cigars—those which can be made most successfully with machinery. In 1921, Class A cigars—those retailing for not more than five cents—made up 30.2 per cent of the total cigar production of the nation; in 1928 they constituted 51.3 per cent.

ORIGIN AND SOURCE OF CAPITAL

The capital invested in tobacco manufacturing largely represents prof-

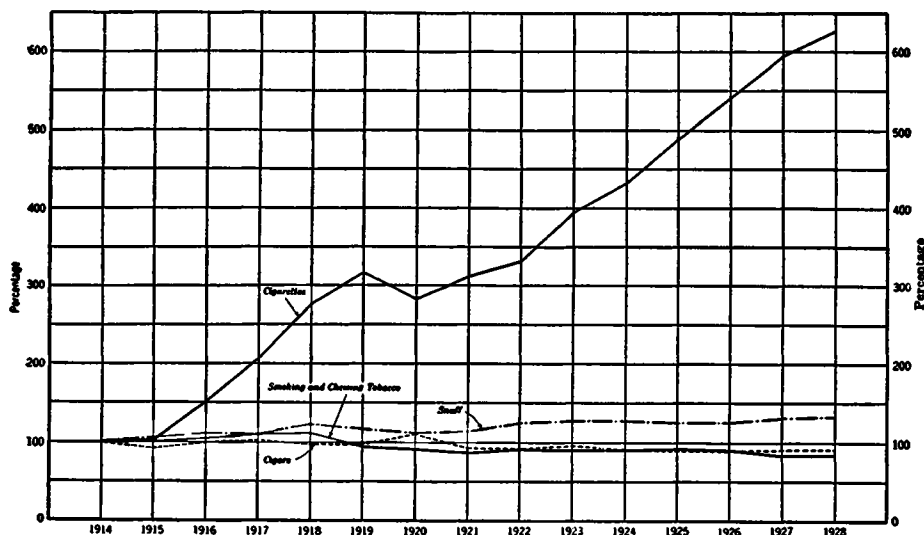
viduals and groups of individuals. Considerable public borrowing has been done, and a considerable part of the investment in some companies at present is represented by bonds; but this method of financing is generally used with the expectation of redeeming the bonds out of earnings.

In 1919, of the entire amount of capital invested in tobacco manufacturing in the United States, thirty-seven per cent was in the cigar industry, thirty-two per cent in the cigarette industry, and thirty-one per cent in the manufactured tobacco division.

PRODUCTION TRENDS

The following graph shows the trend of production for the various manufactures of tobacco since 1914, the period during which there has been such

TREND OF PRODUCTION OF VARIOUS CLASSES OF TOBACCO PRODUCTS *
(In percentages of 1914 output)



* Reprinted by permission from the *Annual Review of the Tobacco Industry for 1929*, published by Chas. D. Barney & Co., New York City.

its which have been left in the business. In its early days, the industry was small-scale and was built up from the fortunes, both large and small, of indi-

a tremendous increase in the use of cigarettes.

Smoking and chewing tobacco is divided into plug, twist, fine-cut, and

smoking. As a group, these show a decline since 1914, but the figures for smoking tobacco alone show an increase in recent years over the 1914 production.⁹

PRESENT DEVELOPMENT AND FUTURE PROBLEMS

Tobacco manufacturing is often referred to as a nondepression industry.

TABLE II—COMPARATIVE PRODUCTION FOR 1914 AND 1928

Product*	1914	1928
Cigarettes (small).....	16,855,626,104	108,705,505,650
Cigarettes (large).....	13,894,359	10,403,004
Cigars (large).....	7,174,191,944	6,373,181,751
Cigars (small).....	1,074,699,103	415,535,410
Plug.....	156,502,776	100,646,047
Twist.....	15,987,339	8,891,640
Fine-cut.....	10,961,100	5,186,304
Smoking.....	226,888,866	231,134,105
Snuff.....	30,595,640	40,475,382

* The figures for cigarettes and cigars are the number made; for the remaining products they are in pounds.

TABLE III—TOBACCO LEAF CONSUMED IN 1914 AND 1928¹⁰

Product	1914 Per Cent	1928 Per Cent
Manufactured tobacco.....	60.1	37.0
Cigars *.....	28.6	20.7
Cigarettes.....	11.3	42.3
	100.0	100.0

* Between 1914 and 1929 the production of dark tobaccos declined 40 per cent. Cigar types declined 25 per cent. During this time the production of cigarette tobaccos nearly doubled.

The South is an important producer of all of the above products except large cigars, large cigarettes, and fine-cut.¹¹ In most of the others the South outranks the remainder of the nation.

⁹ The figures used in the following discussion have been taken from reports of the Commissioner of Internal Revenue unless otherwise stated.

¹⁰ *Commerce Yearbook*, 1929, Vol. I.

¹¹ The majority of large cigars are made in the region of Philadelphia and New York City, and practically all of the large cigarettes are made in

It is characterized by relatively steady employment, the lack of seasonal fluctuations, and independence of conditions of prosperity or depression in other lines of industry. All parts of the industry except the large cigar division are pretty well stabilized. The introduction of machinery into the manufacture of large cigars is causing a revolution there, and several years will be required to reach a point of rela-

the latter place. Most of the fine-cut is made in Illinois, with Michigan and Ohio following.

TABLE IV—PERCENTAGE OF THE VARIOUS TOBACCO MANUFACTURES OF THE UNITED STATES MANUFACTURED IN THE CHIEF PRODUCING SOUTHERN STATES IN 1928 ¹²

State	Plug Per Cent	Twist Per Cent	Smoking Per Cent	Snuff Per Cent	Large Cigars Per Cent	Small Cigars Per Cent	Small Cigarettes Per Cent
North Carolina.....	44.39	.....	33.81	.....	.....	9.25	59.92
Virginia.....	.....	.....	6.61	.....	5.36	63.57	18.64
Missouri.....	39.86	43.30	.....	.....	.....	.....	.....
Kentucky.....	.....	23.16	6.79	.....	.....	.....	.....
Tennessee.....	.....	22.65	.....	44.95	.....	.....	.....
Florida.....	.....	.....	.....	.....	9.47	.....	.....
Total.....	84.25	89.11	47.21	44.95	14.83	72.85	78.56

tive stability.¹³ Large companies are developing.

A point will also be reached when cigarette consumption will not increase as rapidly as it has done in the past fifteen years. In time, the only increase in consumption will come from the annual increment of new smokers. Other forces have probably been more important in increasing consumption during recent years. For several years the per capita consumption of tobacco has been about constant, indicating a transfer from other forms of tobacco to the cigarette.

The use of smoking and chewing tobaccos may decline rapidly after those who learned to use tobacco in these forms have died. Most new tobacco users take up the cigarette, and, conceivably, a time may come when the use of chewing and smoking tobacco will be negligible. An important factor in the security of any branch of the

industry is that the consumers do not change their taste and fancies regarding the use of tobacco. It would work havoc with cigarette manufacturers if the cigarette should lose its appeal.

Another problem is that of tobacco taxes. Tobacco is said to have an inelastic demand. There are cases, however, when excessively high taxes have caused a decrease in per capita consumption.¹⁴ The Federal Government at present charges a tax of six cents on each package of twenty cigarettes. Many of the states are also taxing the sale of cigarettes as a means of obtaining revenue, and, since the demand for tobacco is relatively inelastic, the use of this tax may become more general in the future. Its success may lead to still higher levies.

As has been the case in recent years, the immediate future will probably see keen competition for markets among the four large cigarette producers. In 1928, the wholesale price of cigarettes was cut with the purpose, it is claimed, of driving out new competition. In 1930, the price was restored

¹² The remaining production of plug and small cigarettes was largely around Philadelphia and New York. A large part of the remaining production of cigars, both large and small, was in the Philadelphia region. Ohio ranked next to North Carolina in smoking tobacco. In the production of snuff, Illinois and New Jersey ranked second and third respectively.

¹³ There has been and probably is in the cigar industry at present, unemployment due to the introduction of labor-saving machinery.

¹⁴ In England in 1815, the tax on imported tobacco was raised from 28 cents to 75 cents per pound, after which the consumption fell from 22 million to 15 million pounds. Jacobstein, *The Tobacco Industry in the United States*, Columbia University Studies in History, Economics and Public Law, Vol. 26, No. 3, p. 34.

to the level existing before the cut, this probably being an admission that the new competition could not be driven out. This being the case, it would be better for all concerned if the higher price were restored.

Competition among the large companies has led to enormous expenditures for advertising in the form of newspaper and billboard advertise-

ments and radio programs. The companies which secure the greatest sales get the maximum advantages of volume production. The others, in order to maintain the pace, have to spend more for advertising or else obtain greater operating economy. Probably they do both. The result is that expense-cutting policies are continually being introduced.

The Iron and Steel Industry of the South

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IN discussing the development and the probable future of the southern iron and steel industry, it is easily possible to lay too much stress upon the very favorable raw material bases, and to overlook or minimize the difficult economic conditions against which such industrial development has struggled throughout all of its history. On the one hand we have abundant supplies of iron ores and coals, cheaply mined and cheaply assembled at favorable smelting points; and with these factors alone in view, we are surprised, perhaps, that the South is not the most important iron-producing region of the world. The explanation of its retardation appears when we examine the social and economic conditions which have tended to delay, and as yet to minimize, all purely industrial development in that large section of our country.

In the present study of the subject the raw material factors will be first discussed in considerable detail, while the human and social factors will be noted briefly as they appear in the history of the development of southern iron and steel, which forms the second part of this paper. The relative stress which I am laying on the raw material factors is justified by the *permanence* of their importance as contrasted with the shifting human factors which at times advance, at other times retard, industrial development in any line and in any country or section.

¹ Author, *Coal, Iron and War; a Study in Industrialism Past and Future* (New York, 1920; London, 1921) and *Iron Ores; their Occurrence, Valuation and Control* (New York, 1914).

RAW MATERIAL RESOURCES

In the making of pig iron, which is the primary stage of the iron and steel industry, three primary raw materials are employed at almost every furnace in the world—iron ore, coke, and limestone. This statement might be made unqualified if it were not for the fact that a few small plants still use charcoal as fuel, that a few still smaller smelt by electricity, and that very exceptionally indeed, the ore in some favored locality does not require limestone as flux. But the charcoal iron industry is slowly dying, and any large-scale electric-iron industry will probably always remain unborn; so that for all practical purposes we assume that there is always necessity for the three raw materials first mentioned.

Now, though all three of these raw materials are necessary for the economic production of iron, one of them—limestone—is so widely distributed both geologically and geographically that its occurrence rarely has any serious influence upon the location or the development of any iron industry. There are, it is true, a few points where limestone is difficult to secure and where that fact adds slightly to the cost of iron production. But normally, and especially throughout most of our southern iron regions, limestone (or dolomite) is so common that it does not influence either furnace location or iron costs in any appreciable way. In the present study it is therefore unnecessary to devote space to this particular raw material.

With regard to coal, used now invariably in the form of coke, the case is widely different; for the location of coal fields and the quality of coke influence both the location and the costs of southern iron. But it happens that the volume in which this study appears has a separate discussion of the coal industry of the South, so that the subject may be treated here very briefly and rather incidentally.

Iron ores, first in importance of the iron-making raw materials though third in the order in which they have been referred to here, are fortunately very widely distributed in the Southern states, both geologically and geographically. Further, the fact that certain Southern ports secure coke or coking coals at cheap rates, and therefore afford good assembling points, has made it possible to build up a steel industry at one of these localities (Sparrows Point, Maryland), based on the use of American cokes and foreign iron ores, and to suggest the same possibility at several other points along our Southern coasts, both Atlantic and Gulf. Finally, there is a somewhat related situation existing in the border states, particularly in West Virginia and Missouri, where iron ores from the Lake Superior fields can be brought down to meet local or other southern coals and cokes on a good assembling basis.

The foreign and Lake ores used at various southern furnaces will not be discussed in detail, though later a note will be added as to their actual and relative tonnage importance in the southern iron industry. Attention will be concentrated on the iron ores which are actually mined and used in the South itself, and these will be treated in the order and the relative detail due to their actual importance in the iron industry today and probably in the future. It is necessary to say this spe-

cifically, for the iron ores first used in the South, three hundred years ago, were of a type which is of no interest today, and it is only within the past sixty years that the red hematites which today are the backbone of southern industry have been utilized at all. In all the intervening period, the ores which attracted attention were ores of a type which is now distinctly second in rank and importance, and which will forever remain so as we now know, on the basis of reserve resources.

TYPES OF ORE

The iron ore supplies in the Southern United States consist of ores of three types, differing widely in character, location, geological association, and importance—both present and future. These are:

I. Red Hematites: anhydrous iron oxides; called at times *Clinton ores*, *fossil ores*, *oolitic ores*, or simply *red ores*. Outcropping in long strips chiefly along the west side of the Great Valley, from Virginia to Alabama. Bedded or sedimentary ores; reserve tonnages enormous. Grade usually 30 to 40 per cent iron, often high lime, sometimes high silica, always high phosphorus. Suitable for basic steel making.

II. Brown Ores: hydrous iron oxides. Occurring in scattered deposits, sometimes linear, usually pocket-like. Frequent in the Great Valley, from Virginia to Alabama. Less important fields west of the Appalachian coal region (in central and west Tennessee, and so forth) and in northeast Texas. Grade fairly high after concentration; 45 to 55 per cent iron, usually high silica, often moderate phosphorus.

III. Magnetites and Specular Hematites: anhydrous ores. Occurring chiefly in separate though often associated lenticular deposits. Chief reserves in Appalachian region of North

Carolina, and so forth; less important tonnages elsewhere, notably in Missouri, central Texas, east Alabama, and so forth. Grades often very high with or without concentration, 50 to 60 per cent iron, sometimes low phosphorus.

All of the earlier iron history of the South is associated with the use of ores of Types II or III in small isolated furnaces making foundry and forge irons. Most of these local efforts have died with no survival at the locality. Practically all the current iron and steel history of the South is bound up with the slow development, since about 1870, of the red ores of Type I, and tends toward basic open-hearth steel rather than toward foundry irons. In future there may be some slight tendency toward reversion to use of the magnetites (Type III) and brown ores (Type II) in somewhat greater relative tonnages than has been the case recently.

In any such future shift, the emphasis is likely to be placed upon the magnetites rather than upon the brown ores, not merely because the magnetites yield a higher grade product with easier concentration, but because the known reserves are at some points better placed for large-scale assembly operations. But so far as we can see now, the red ores will always be the mainstay of southern iron and steel development, at least in so far as that depends upon local ores. That there will sometime be important steel development at such attractive points as the Hampton Roads region affords, is hardly to be doubted; but that will be based primarily upon the assembly of American cokes and Swedish, French, or Algerian ores.²

The red ores occur as sedimentary or

bedded deposits and extend for long distances along the outcrop, while they can be followed underground for any distance up to the limits of economic haulage. Their geographic distribution is indicated summarily on the accompanying sketch map (Fig. 1) where the chief ore regions of the South—including the fields of magnetites and brown ores as well as red ores—are roughly located. It will be seen that the red ores outcrop along a long strip reaching southwest and northeast from western Maryland to central Alabama. They are thin and unimportant in most of the northern portion of this strip, reaching greater thicknesses in Tennessee and attaining their maximum of importance in Alabama between Attalla and their southern limit a little below Birmingham.

The red ores range quite widely in composition, as between different beds and different sections of their range. But they are predominantly low in iron—normally 34 to 40 per cent—and intermediate in phosphorus. If we were speaking from a provincial standpoint we would say *high*-phosphorus; but the ores which compete with ours are often very much higher still, as we shall see later.

The following analyses, taken from various sources, may be accepted as giving a fair idea of the usual working range of southern red ores:

TABLE I

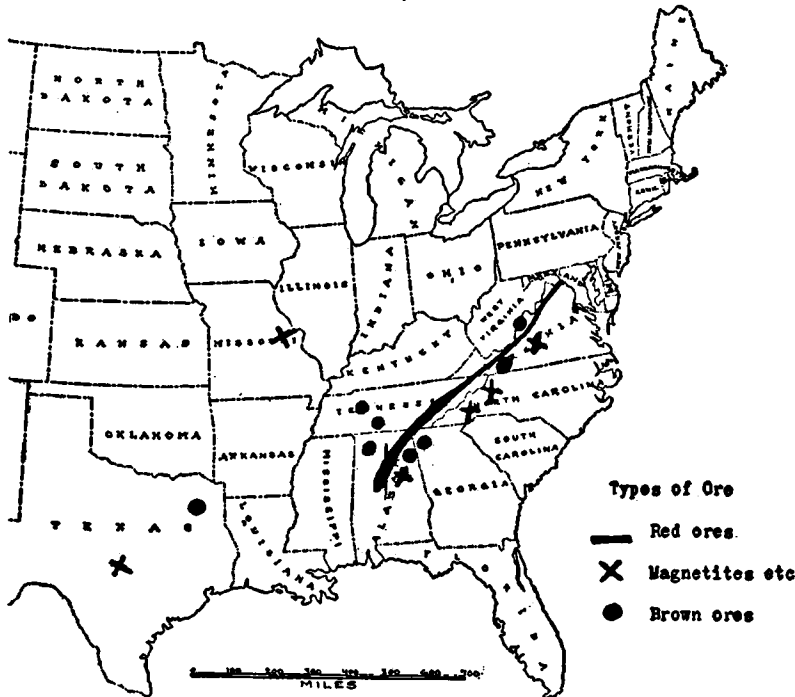
Metallic Iron	Silica	Lime
35.40.....	25.90	9.50
36.26.....	19.02	13.50
34.90.....	14.86	16.12
36.97.....	12.58	16.98
35.10.....	10.64	19.31
35.44.....	11.20	18.25

OUTPUT

All of our figures as to iron ore output anywhere in the South prior to 1860 are

² This point is elaborated on page 61 where a sketch map (Fig. 2) showing the current market limits of imported, Lake, and local ores is presented.

FIGURE 1—SKETCH MAP SHOWING CHIEF SOUTHERN IRON-ORE SUPPLIES—E. C. ECKEL, 1930.



sheer guesswork. From that date onward we get pretty accurate figures for the census years 1860, 1870, and 1880; while from 1882 onward we get still closer figures annually from United States Geological Survey and (very much later) United States Bureau of Mines sources. For our present purpose, a few data for selected years are presented here.

TABLE II

Year	Alabama	Other South	Total South
1905.....	3,782,831	1,917,988	5,700,819
1906.....	3,995,098	2,330,612	6,325,710
1913.....	5,333,218	1,124,254	6,457,472
1925.....	6,891,081	381,917	7,272,998
1928.....	6,159,863	328,399	6,488,262
1929.....	6,637,299	363,375	7,000,674

This tabulation brings out certain results which are not generally under-

stood, even in the South, and not even in the iron industry. It will be seen that during these crucial twenty-five years the South has increased some 23 per cent in annual output of iron ore, while study of total figures shows that during the same period the total United States output increased 48 per cent. So that while in 1905 the South produced 13.4 per cent of the total national output, in 1929 it produced only 9.6 per cent. On the other hand, if we discard all the rest of the South and consider Alabama alone, we see that in 1905 that state produced 8.9 per cent of the total United States output, while in 1929 it produced 9.1 per cent. Obviously, therefore, we have in the South a great and growing iron and steel center, while the outlying southern districts and states have shown marked regression rather than progress since 1905. This is regrettable, but it may as well be faced.

ORE RESERVES

From questions of actual shipping grades and actual outputs we may turn profitably, though very briefly, to the question of unmined ore reserves, which in large part will determine the future of any field. It would easily be possible in this connection to state tonnage estimates, made on different bases, which would stimulate public curiosity and local pride. But for our present purpose it will be better merely to note that various estimates for reserve tonnages of red ores in the Southeastern United States range from 1,500 to at times 5,000 million tons. Obviously, no one is troubled about the possible exhaustion of even the smaller tonnage estimated. The real question is how fast it will be possible to put any serious percentage of this unmined reserve into human use through the blast furnace and the steel mill; and here we face, necessarily, comparison with the great competitive ore fields of the world. For Alabama is, in future, our great export region for steel products, if we have any export trade at all after tariffs and reparations get into effective action.

In making the comparisons above suggested, we may safely start on the basis that there are now known to exist seven major iron-ore fields, of which four are in North America and three in Europe. It may be added in passing that other fields of similar size are likely enough to exist elsewhere, as yet undiscovered. The four American fields of major importance are the Lake Superior region and Alabama in the United States, Wabana in Newfoundland, and North Cuba. The three European fields of equal or greater size are respectively Lorraine in France, Armorica (Normandy, Brittany, and Anjou) also in France, and North Sweden. All seven of these fields can safely be estimated to contain from 1,500 to 3,500

million tons of workable, merchantable iron ore, utilizable under current economic conditions.

As a matter of interest in this connection I have tabulated below the timing of the effective discoveries of the seven great ore regions now known. It will be seen that two of them, Lorraine and Armorica, date back into prehistory so far as utilization is concerned, both probably having been worked well before the Christian era. All the others are of recent discovery and utilization; and it is specially worth noting that real recognition of the tonnage importance of the fields is in practically every case a matter of the past few decades. The nineteenth century did not think in terms of ore reserves; it merely generalized in Victorian manner. The dates given are in every case merely approximations.

TABLE III

	Earliest Utilization	Reserve Tonnages Recognized
North Sweden.....	1880	1900
Wabana.....	1896	1905
Alabama.....	1870	1905
Armorica.....	Prehistoric	1910
North Cuba.....	1905	1905
Lorraine.....	Prehistoric	1880
Lake Superior.....	1850	1892

The following schedule contains data which bring out certain other points of interest in attempting to place the Alabama field in its proper relative position in future world industry and commerce.

From this brief schedule it will be seen that Alabama and Lorraine are the most closely related of the six great ore fields, so far as composition of the ore is concerned, with regard to phosphorus and iron grades. Of the two, Alabama has the advantage that the chief im-

TABLE IV—COMPARISON OF WORLD'S GREAT ORE FIELDS IN COMPOSITION

Phosphorus Content	Process Adaptable	Average Grades in Iron		
		Over 55%	45%-55%	Under 45%
High, over 1%.....	Basic Bessemer	North Sweden	.....	Lorraine
Medium, $\frac{1}{4}$ %-1%.....	Basic open-hearth	North Sweden	Wabana Armorica	Alabama Lorraine
Low, under $\frac{1}{4}$ %.....	Acid Bessemer; Acid open-hearth	Sweden	Lake North Cuba	.....

purity in its red ores is lime, while in the bulk of the Lorraine reserve, the silica is the main impurity. Both Wabana in Newfoundland and Armorica in West France rank with Lorraine and Alabama so far as phosphorus grade is concerned, and above them as regards iron. The Lake region, with still rather high iron, stands out as the main field with large tonnages of low-phosphorus ore. Sweden ranks above it in iron grade and has a wide range in phosphorus grades available for many processes.

The Cleveland and similar English fields have immense masses of ore still lower than anything taken seriously in Lorraine or Alabama—under 30 per cent iron in great part, with intermediate phosphorus giving a pig with from 1 per cent to $1\frac{1}{2}$ per cent phosphorus. I have omitted these from the table above, since their utilization depends upon securing cheap foreign ores (Spanish heretofore) of high iron grade for admixture.

DEVELOPMENT OF THE INDUSTRY

The southern iron industry dates back to a very remote period, as American history goes, for one of the earliest enterprises of the Jamestown colony was the manufacture, on a very tiny scale indeed, of iron from a bog-iron ore deposit in the vicinity of Jamestown. This, like all our other Atlantic Coast

iron plants of the colonial period, left no successor. The American iron industry grew up, when it did begin to take a serious growth, further inland, working on better raw materials.

During all the later colonial period there was a growing production of iron, chiefly from the colonies of New York, Pennsylvania, Maryland, and Virginia. This was based on deposits of brown iron ore in the Great Valley, and on deposits of magnetite in the Highlands-South Mountain region. The development of the industry was limited by the colonial system of the times, and at the time of the Revolution the United Colonies were making some twenty thousand tons of iron annually, of which half was shipped to England for fabrication. These amounts seem trifling today; at the time, the production quoted was about one fifth of the entire world output of iron. It took us fifty years after the Revolution to regain the same *relative* importance as an iron-producing country.

Of the totals then made, Maryland and Virginia seem to have accounted for about half, or, say, some ten thousand tons annually in 1775. During the Revolution, iron output probably increased in both colonies; but the disastrous period of uncertainty which followed independence gave no reason for further growth. It was not until the period 1808-1814 that heavy in-

creases in iron output arrived, and then they were forced by the Napoleonic War and the War of 1812, which, with trade interruptions and actual warfare, had all the forcing effects of prohibitively high tariffs.

From the postwar depression of 1815-1825 onward, the southern iron industry grew, along with all other American industries, but owing to cheap labor and an abundant supply of cheap fuel (charcoal) it grew at a somewhat faster rate than that of other sections. We have some reason to think that in the decade before the Civil War the South was producing a larger proportion of the total American iron output than it has done at any time since until very recent years indeed.

After the Civil War the southern iron industry slowly regained activity, still based primarily upon charcoal as fuel and upon brown ores or magnetites as raw materials. The invention of the basic open-hearth process in Europe in 1875 was indeed the first possible opportunity for making steel out of southern red ores, and from that date onward the Birmingham field took on a new *possible* importance. With the arrival of the period of great industrial consolidations, in 1899-1905, this possibility attracted more and more attention; and an attempt to realize it in 1905-1907 ended in the entrance of the United States Steel Corporation as an active factor in southern steel development. From 1907 onward there has been no lack of capital available for such development, and the limits of growth are merely those fixed naturally by the conditions of the southern iron market itself and by conditions and costs of transport to better markets.

Here we must go back to an earlier suggestion, which is that the South is not as good a market, per capita, for most industrial products as is an equal

area in the North or the Midwest. This is due primarily to lower buying power per capita, which in turn is due chiefly to a lower wage scale and to poorer trade training. The latter defect can be remedied easily enough; the former is perhaps inherent in the presence in the South of a large mass of an unassimilable race, capable of cheap living, incapable of serious forethought, and not amenable to ordinary economic arguments.

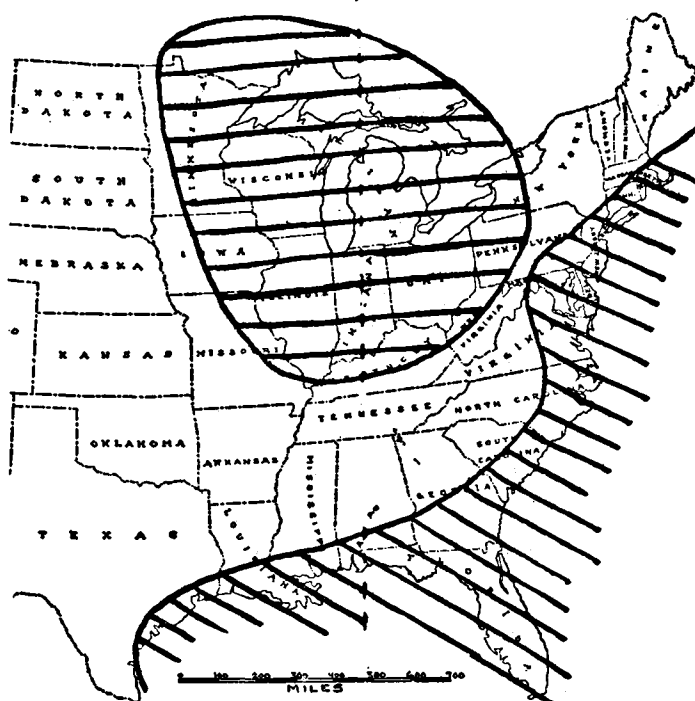
SUPPLY OF THE MARKETS

In considering the actual and prospective sites for southern steel manufacture, we must pay attention to markets, ores, and fuels. The matter of southern coals is discussed in another article in this series and need not be treated here. The matter of iron ores has been discussed on earlier pages, but may now be reconsidered from another standpoint.

On the accompanying sketch map (Fig. 2) I have indicated the approximate limits of the markets now reached, or economically reachable, by three great classes of iron ore—Lake Superior, imported, and local. The horizontally shaped oval area in the northwest portion of the map is economically supplied by Lake ores in normal years. It will be seen that, so far as the South is concerned, this Lake ore market will take in most of the actual or possible steel-producing areas in the border States of Missouri, Kentucky, and West Virginia.

A second elongated band along the Atlantic and Gulf Coasts is supplied, or could be supplied, more cheaply by imported ores than by United States ores. The imported ore, coming from such diverse fields as Cuba, Algeria, Morocco, France, Sweden, Chile, and Newfoundland, arrives from regions of low mining wages, is carried by water at cheap rates, and in most cases is far

FIGURE 2—SKETCH MAP SHOWING LIMITS OF IRON-ORE MARKETS—E. C. ECKEL, 1930.



Horizontally shaded area supplied most cheaply by Lake ores.
Diagonally shaded area supplied best by imported ores.

superior to any available southern ore for grade. It is this situation that has built up steel mills running chiefly on imported ore in eastern Maryland, and that promises some day to build up a still more important iron and steel industry in the Hampton Roads region. Even further to the south, such localities as Brunswick and Mobile must be kept in mind as possible assembling points for American coke and foreign iron ore, with water transport to the best markets for the finished products. That, however, is in the future.

RELATIVE IMPORTANCE OF THE SOUTHERN INDUSTRY

Finally, we may turn to brief consideration of the importance of the southern iron and steel industry from a tonnage standpoint. This of course

involves a certain amount of both historic and statistical background, so as to show the way and the rate of development of this industry. But it involves also at least a glance at developments elsewhere in the United States and in the outside world, so that the *relative* importance of the South, at different times and under different conditions, may be brought out more sharply.

This tabulation, like that earlier presented relative to iron ore production, shows some surprising things. First, the South in 1905 made some 14.2 per cent of the total United States output of pig iron; by 1929 this percentage had *fallen* to 11.6 per cent. In this regard (pig iron) Alabama shares the general southern fortune, for while in 1905 that state had made 6.98 per cent of

TABLE V—PIG IRON SHIPMENTS FROM AMERICAN BLAST FURNACES, 1905-1929

Year	Alabama	Other South	Total South	Total U. S.
1905.....	1,604,062	1,665,611	3,269,673	22,992,380
1906.....	1,674,848	1,842,368	3,517,216	25,307,191
1913.....	2,057,911	1,278,046	3,335,957	30,966,152
1925.....	2,910,370	1,543,333	4,453,703	36,814,702
1926.....	2,875,534	1,522,040	4,397,574	38,181,053
1928.....	2,525,812	2,008,308	4,534,120	38,303,699
1929.....	2,697,814	2,107,914	4,805,728	41,549,161

the national total, and increased its ratio to 7.6 per cent by 1925, its proportion had dropped to 6.5 per cent in 1929.

Some light is thrown on the situation if we study these rather depressing facts from a more general standpoint—that of world industry. For then we see immediately that the world as a whole has fallen off very definitely in productivity since 1913, though that fact is still unadmitted by many apologists for specific political theories and practices. That fact, obvious enough to any one examining data impartially, has been covered up to most American eyes by our own “prosperity” during and after the World War. What actually happened, of course, was that our great industrial rivals were engaged in a long and destructive struggle for four years; that throughout that period the United States supplied all the necessary finished materials without competition; and that many of its basal industries broke all records for tonnage output

and for dollar profits in that time and since.

During that long period of frenzied production the South got less than a normal share of the business, partly because of the difficulties of export from its ports and partly because of the lack of finishing mills in that section. That explains, I think, the falling off in relative southern importance, so far as the American iron industry is concerned, in the past two decades.

In future periods of normal business, after the present severe crisis shall have passed, it seems probable that the South, and particularly Alabama, will show increases in iron and steel output at rates higher than those of the sections dependent on Lake or imported ores. The reasons for that judgment are foreign to the present discussion, but they seem sound. The gradual growth of southern markets for semi-finished and finished products will be one of the factors in such shift in relative status.

The Lumber and Forest-Products Industry of the South

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THE Southern states are destined to become the most important section of the United States for the location of industries which use wood and other forest products as raw material.

There are several natural causes which justify and substantiate this statement. Wood-using industries have usually been established in the general vicinity of the forests, and as these forests in one section of the country have been harvested and destroyed, the industries have moved to other sections where there were existing forests. The Southern states are now (with the exception of Oregon and Washington on the Pacific coast) the principal producers of forest products in this country. These states contain the only bodies of virgin hardwoods and are the country's chief source of supply of these woods.

ADVANTAGES OF THE SOUTH

With few exceptions, the Southern states are capable of supplying the various types of wood demanded by the wood-using industries; and they have splendid port facilities for bringing in the few woods that have to be imported. Electric power and transmission lines interlace the Southern states, and electric energy can be purchased at a reasonable price in almost any section of these states. In addition to available electric energy developed from water power, the deposits of natural gas and coal furnish fuel for the development of steam power and electric power, which, in many sections of

these states, can be obtained at reasonable rates. Railways, waterways, and hard-surfaced highways intersect all sections of the Southern states, and these, together with their many seaports, give these states very advantageous facilities for shipping their manufactured products.

Climatic and other conditions throughout these states make the operation of factories and lumber plants more efficient and less expensive than that in the Northern and the Central states.

Labor in the South is able, efficient, and abundant, but not cheap.

Many wood-using industries are now producing their own timber, and they own, or are planning to own, sufficient timber land to supply all or a considerable proportion of the raw material that they need. By reason of climatic conditions which give the South an exceptionally long growing season (in some sections, practically the whole year); because of soils which are especially adapted to the growth of certain trees required by these industries; because very large areas of its land are better suited for growing trees than for any other purpose, and can be purchased at reasonable rates; and because several of the states are considering the classification of land for assessment and taxation, those desiring to produce their own forest material will find the Southern states most favorable for this purpose.

Originally a large proportion of the area of the Southern states was in virgin

forests, and although much of this area has been cleared for various purposes and a large proportion of the virgin forest has been harvested, there still remains from thirty to about sixty per cent of the acreage in forests or in land that should be reforested.

The total land area and the original and present forest areas of the Southern states are given in Table I.¹

cutting and cultivation, not only furnish the present wood-using industries with the forest products they need, but will permit of a considerable expansion of many of these industries.

As there has never been an accurate and thoroughly dependable timber census of the United States, it is possible only to give an approximate estimate of the timber supply in the

TABLE I—AREA, FOREST LAND, ORIGINAL AND PRESENT, IN SOUTHERN STATES, BY STATES

State	Total Land Area in Acres *	Forest Areas in Acres	
		Original Forest	Present Forest †
Alabama	32,818,560	32,000,000	20,000,000
Arkansas	33,616,000	32,000,000	21,500,000
Florida	35,111,040	28,800,000	19,000,000
Georgia	37,584,000	36,480,000	20,000,000
Kentucky	25,715,840	24,320,000	9,400,000
Louisiana	29,061,760	25,600,000	17,365,000
Maryland	6,362,240	5,760,000	2,228,000
Mississippi	29,671,680	28,800,000	17,000,000
Missouri	43,985,280	32,000,000	13,820,000
North Carolina	31,195,600	30,080,000	18,000,000
Oklahoma	44,424,960	12,000,000	8,000,000
South Carolina	19,516,800	17,920,000	10,000,000
Tennessee	26,679,680	25,600,000	12,000,000
Texas	167,934,720	30,000,000	15,000,000
Virginia	25,767,680	24,960,000	12,000,000
West Virginia	15,374,080	15,360,000	8,500,000

* Excludes Water Surface.

† Includes those acres of idle lands, once forested but now incapable of regeneration to commercial timber without planting.

Only a small proportion of these forest lands is publicly owned, the balance being in private ownership. In some of the states the farmers own fifty per cent of the privately owned forest areas.

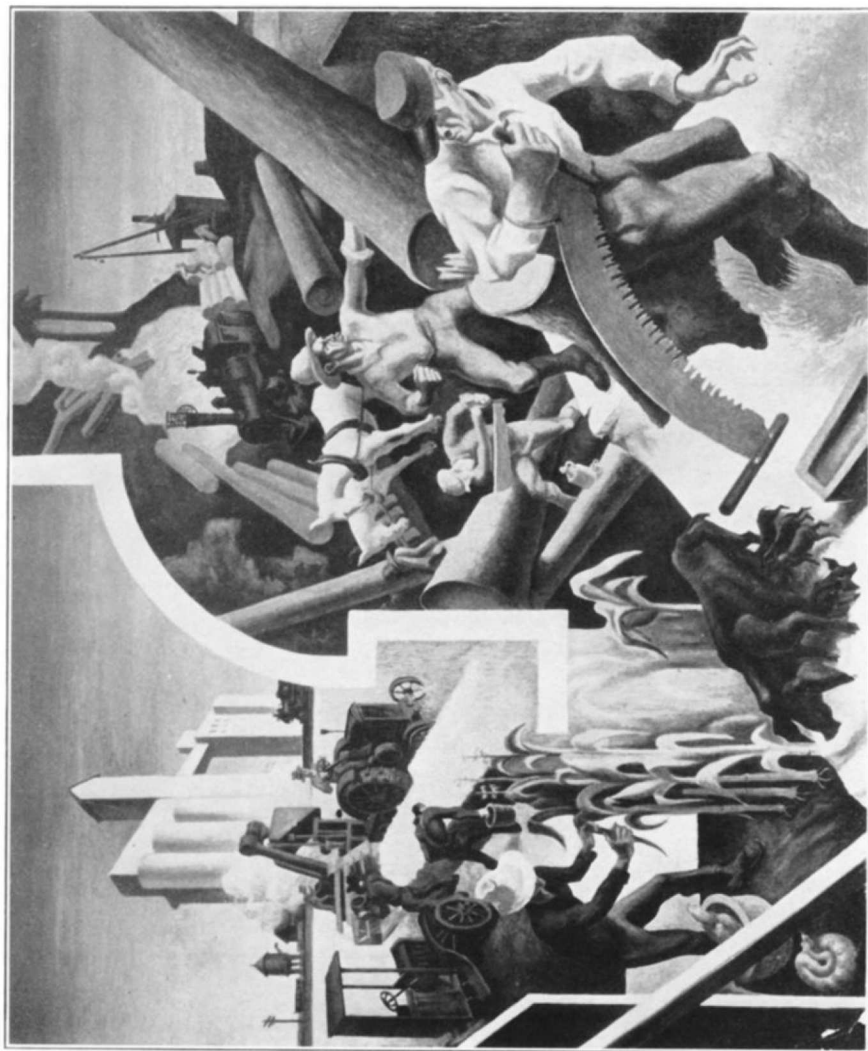
THE TIMBER SUPPLY

Although a large percentage of the forest area of the Southern states has been cut over, there still remains a large supply of both hardwoods and softwoods which will, with conservative

¹ From U. S. Forest Service, Bull. 21.

Southern states. At the present time we probably have a more accurate estimate of the timber supply of the South itself than ever before. The American Tree Association in its recent publication, *The Forestry Almanac*, estimates the timber stand of the Southern states to be approximately four hundred billion feet, divided nearly equally between the hardwoods and the softwoods.

In Table II there is given the estimated timber stand of the hardwoods and the softwoods in the Southern states.



AGRICULTURE AND LUMBERING

One of a number of murals painted by Mr. Thomas H. Benton for the New School of Social Research in New York. Reproduced by permission of Dr. Alvin Johnson, Director

TABLE II—ESTIMATED STAND OF TIMBER IN SOUTHERN STATES, 1929

State	Hardwoods Board Feet	Softwoods Board Feet	Total
Alabama.....	22,000,000,000	23,000,000,000	45,000,000,000 †
Arkansas.....	25,000,000,000	15,000,000,000	40,000,000,000 †
Florida.....	2,500,000,000	28,000,000,000	30,500,000,000 †
Georgia.....	10,000,000,000	25,000,000,000	35,000,000,000 †
Kentucky.....	19,000,000,000	1,000,000,000	20,000,000,000 †
Louisiana.....	25,000,000,000	29,500,000,000	54,500,000,000 †
Maryland.....	2,500,000,000	1,325,000,000	3,825,000,000 †
Mississippi.....	2,500,000,000 *	15,000,000,000 *	17,500,000,000 †
Missouri.....	2,000,000,000	50,000,000	2,050,000,000 †
North Carolina.....	15,000,000,000	15,000,000,000	30,000,000,000 †
Oklahoma.....	5,300,000,000	2,500,000,000	7,800,000,000 †
South Carolina.....	3,500,000,000 *	13,000,000,000 *	16,500,000,000 †
Tennessee.....	19,500,000,000	500,000,000	20,000,000,000 †
Texas.....	7,500,000,000	17,000,000,000	24,500,000,000 †
Virginia.....	20,000,000,000 *	10,000,000,000 *	30,000,000,000 †
West Virginia.....	25,000,000,000 *	5,000,000,000 *	30,000,000,000 †
Total.....	206,300,000,000	200,875,000,000	407,175,000,000

* Author's Estimate.

† Estimated by State Forester.

‡ From American Tree Association.

On account of the wide variation in topography and soils of the Southern states there is a great variation in the species of trees, methods of logging, and types of industries in the three physiographic divisions of these states.

In the Southern Appalachian Mountain region are found the dense spruce and balsam forests, most of which, however, have now been cut over. Below these spruce forests are the mixed hardwood forests which also contain hemlock, white pine, and yellow pine. The principal hardwoods are red and white oak, yellow poplar, chestnut, hickory, maple, basswood, ash, cherry, and walnut. The three latter species have been largely removed. Walnut is being replanted to some extent. With the prevention of forest fires, yellow poplar and some of the other more valuable species are reproducing themselves, and the second growth forests of this mountain region are now in very fair condition.

In the Piedmont Plateau region, extending from the mountain region to the Coastal Plain and the Mississippi Valley lowlands, are our mixed forests of hardwoods and softwoods. The hardwoods consist largely of red and white oak, hickories, a little yellow poplar, and red cedar. Nearly all of the original pine has been removed.

In the Coastal Plain region, extending from the Piedmont Plateau to the Atlantic Ocean and to the Gulf, and in the lowlands of the Mississippi Valley, the forests are principally pine on the better drained lands, and mixed hardwoods in the swamps and river-bottom lands.

There are but very few areas of commercial long leaf pine left in the northern portion of the long leaf pine belt (North Carolina and South Carolina) and the principal areas are now in southern Georgia, Louisiana, Florida, and to the west. This pine has been largely replaced by second growth

loblolly pine (known as North Carolina pine). Slash pine is now being planted in many areas formerly covered with long leaf pine. The hardwoods found in the swamp and bottom lands of the Coastal Plain region are principally oak, hickory, ash, sweet and black gums, white cedar, and in the deeper swamps, cypress.

LUMBER PRODUCTION

The South is still exporting a considerable quantity of lumber to other sections of the United States, although it is importing small amounts from states outside the South and from abroad. There is quite a little lumber imported from one Southern state to another.

With the exception of foreign woods, the South can produce practically all the lumber that it needs for its various wood-using industries, and still have a surplus to export.

The South has learned the value of utilizing its lumber to manufacture wood products and shipping these, instead of shipping a large percentage of its lumber as was formerly done and then bringing it back as the finished wood product.

Lumber production in the South reached its peak in 1925, and in recent years it has declined. Production of wood, however, continued to increase because of expanding consumption of pulp wood. Total production of lumber may not again increase materially, but there should be an increase of the better grades of lumber, particularly those needed for structural materials, because a much larger percentage of the lower grades is being used for pulp wood, and because of the production of dimensions both from softwoods and hardwoods at the mills.

The total consumption of wood by the southern industries during 1928 is given in Table III.

TABLE III—TOTAL CONSUMPTION OF WOOD BY THE SOUTHERN INDUSTRIES IN 1928
(Thousand feet B. M.)

Types of Wood	Quantities Used
Southern Softwoods.....	3,651,339
Western Softwoods.....	118,089
Southern Hardwoods.....	2,351,321
Imported Woods.....	18,169
Total, All Woods.....	6,133,918

With few exceptions, the native woods used in the industries of the South are produced locally, and the forestry policy that has been inaugurated in all but one of the Southern states should insure the ability of the South to produce indefinitely the quantities of the various types of wood needed for its present industries and also for their future expansion.

In Table IV there is given a list of the different types of woods and the quantity used in the South during the year 1928.

In addition to the native woods mentioned in Table IV, small quantities of several foreign woods are used in southern industries, chiefly in the

TABLE IV—TYPES AND QUANTITIES OF NATIVE WOODS USED IN SOUTHERN INDUSTRIES IN 1928²

SOUTHERN SOFTWOODS	
Types	Quantities 1,000 ft. B. M.
Cedar (red).....	18,269
Cedar (white).....	4,627
Cypress.....	172,315
Hemlock.....	1,685
Pine (yellow).....	3,420,117
Pine (white).....	29,588
Spruce.....	4,738
Total.....	3,651,339

² From *Lumber Used in Manufacture—1928*, U. S. Forest Service.

WESTERN SOFTWOODS

Types	Quantities 1,000 ft. B. M.
Cedar (Western).....	1,890
Douglas Fir.....	52,614
Pine (yellow).....	55,106
Redwood.....	3,479
Total.....	113,089

SOUTHERN HARDWOODS

Types	Quantities 1,000 ft. B. M.
Ash.....	60,315
Basswood.....	11,310
Beech.....	28,911
Birch.....	14,676
Buckeye.....	582
Cherry.....	259
Chestnut.....	73,969
Cottonwood *.....	71,725
Dogwood.....	3,188
Elm.....	20,004
Hackberry.....	871
Hickory.....	120,898
Locust.....	7,919
Maple.....	92,125
Oak.....	848,361
Pecan.....	1,597
Persimmon.....	1,760
Red Gum.....	619,766
Sycamore.....	15,763
Tupelo †.....	176,865
Walnut.....	13,108
Willow.....	5,025
Yellow Poplar ‡.....	161,727
Miscellaneous.....	604
Total.....	2,351,328
Total All Softwoods.....	3,764,428
Total All Woods.....	6,115,756

* Includes Aspen.

† Includes Black Gum.

‡ Includes Cucumber and Magnolia.

manufacture of furniture and cigar boxes.

The several wood-using industries of the Southern states are given in Table V, which also gives the amount of wood used in each of these industries.

TABLE V—IMPORTANT WOOD-USING INDUSTRIES OF THE SOUTH, AND THE QUANTITY OF WOOD USED BY EACH INDUSTRY IN 1923³
(Thousands of feet B. M.)

Industries	Quantities
Planing Mill Products.....	2,636,779
Boxes and Crates.....	1,129,795
Sashes, Doors, Blinds, and General Mill Work.....	896,257
Furniture.....	388,906
Car Construction and Repairs....	246,514
Vehicles—Motor.....	193,050
Baskets and Fruit Containers....	150,947
Chairs and Chair Stock.....	77,470
Handles.....	75,169
Caskets and Coffins.....	56,319
Vehicles—Non-Motor.....	32,487
Fixtures.....	27,540
Ship and Boat Building.....	20,869
Signs and Supplies.....	16,928
Boxes—Cigars and Tobacco....	16,636
Wooden Ware and Novelties....	16,587
Refrigerators and Kitchen Cabinets.....	14,096
Brooms and Carpet Sweepers....	12,522
Agricultural Implements.....	10,482
Machinery and Apparatus—Electrical.....	9,157
Total, 20 Industries.....	6,028,510
All Other Industries (34).....	79,143
Total All Industries (54).....	6,107,653

As is seen from Table V, more lumber is used in the South for general building and construction than for any other purpose; but the quantity used per capita is very much lower than formerly. There has been too much low-grade lumber forced on the market for structural purposes, which does not give satisfactory results. If this low-grade lumber could be used in the manufacture of pulp, and only the better grades of lumber put on the market for structural purposes, it would undoubtedly increase the demand for this lumber.

³ From *Lumber Used in Manufacture—1923*, U. S. Forest Service.

WOOD PRESERVATION

If lumber is to retain its popularity as a building material, its usefulness to the consumer must be increased. This can be done through the application of wood preservatives, which will prevent decay from exposure to weather, and depreciation through attacks of insects. Lumber so treated can be used to advantage for the following structural purposes:

In residential structures, for foundations, sills, sub-floors, joists, shingles, outdoor steps, and porches;

In agricultural structures, for posts, sawed fencing, foundation sills, stanchion stock, flooring, plates, joists, studding, and so forth;

By public utility corporations, in crossings, arms, poles, posts, conduits and ties;

In mine construction, for pillars, posts, crossties, shoring, cribbing, heavy dimensions, and underground timbering;

In road construction, for highway posts, signs, bulkheads for retaining walls, permanent wood construction, guard rails, bridge floors, and so forth;

In industrial construction, for framing roof timber, sub-floors, joists, rafters, flooring blocks, in paper, textile, and chemical mills; for piling and sub-structure, flooring, bulkheading, and sheet piling in marine work;

By railroads, for crossties, switch ties, tie plugs, crossing plank, bridge and trestle timbers, piling, foundation platforms, substructures, and so forth.

The railroads were the first to practice wood preservation, and this was in connection with the treatment of ties, piling, and bridge timbers. Industrial plants, public utility companies, and highway departments are now also using a great deal of preserved wood. Its economic use is not, however, confined to these industries, but can be of

value to the small consumer. The more extensive use of preserved wood in the South will have a decided influence in continuing the use of lumber for structural purposes.

There is a splendid opportunity for a large development of this preserved wood industry in the South; but as it is developed, care must be taken to see that the wood used is properly treated and will give the proper service for the particular purposes for which it is to be used. Wood, properly treated for prevention of decay, and of insect attack, and for fireproofing, will become available for purposes for which it has previously been barred.

FURNITURE INDUSTRY

High-grade woods are required by the furniture industry. At first this industry obtained its supplies from the Northeast. Then the waning of these supplies forced the industries westward, where they expanded very largely from 1875 to 1900, utilizing mainly lumber cut from the magnificent virgin hardwood forests of the Middle West. In the next fifteen years the Southern Appalachians were the chief source of supply of hardwoods, and now the principal source is the forests of the Mississippi Valley, the smaller amounts coming from the forests of the Southern Appalachians and from the Piedmont and Coastal Plain regions.

Several woods that were formerly not considered of any particular value to the furniture industry are now used in large quantity—notably, red gum. In 1928 one third of all the wood used by the furniture industry of the United States was red gum, and this amount was also one third of the total production of 1,241,285,000 ft. B. M. of this wood. Practically one half of this amount (619,466,000 ft. B. M.) was produced in the South.

The various native woods used in

the furniture industry throughout the United States are: the softwoods—red and white cedar (Eastern), Western cedar, cypress, fir, Douglas fir, hemlock, larch, yellow pine (Southern), yellow pine (Western), white pine, redwood, and spruce; the hardwoods—alder, applewood, ash, basswood, beech, birch, buckeye, butternut, cherry, chestnut, cottonwood, elm, hackberry, hickory, holly, maple, oak, pecan, red gum, sycamore, tupelo, walnut, willow,

ginia was second of the Southern states and sixth of all the states in the quantity of wood required for its furniture industry, which was 93,977,000 ft. B. M. Michigan, with a requirement of 119,210,000 ft. B. M., was third; New York fourth and Illinois fifth.

There is given in Table VI the amount of lumber, veneer, and bolts (or logs) consumed by each of the important furniture-producing Southern states.

TABLE VI—QUANTITIES OF WOOD USED BY FURNITURE FACTORIES DURING THE YEAR 1928⁴
(Thousand feet, B. M.)

State	Lumber	Veneer and Plywood	Bolts and (or) Logs	Total
Arkansas.....	10,747	531	300	11,578
Georgia.....	8,482	750	...	9,232
Kentucky.....	23,065	1,257	...	24,322
Maryland.....	10,856	112	...	10,968
Missouri.....	9,599	298	...	9,897
North Carolina.....	137,964	12,723	171	150,858
Tennessee.....	40,903	1,948	653	43,504
Texas.....	10,241	257	...	10,498
Virginia.....	83,780	10,197	...	93,977
All other states.....	22,514	1,014	544	24,072
Total.....	358,151	29,087	1,668	388,906

and yellow poplar. Of these woods all but Western cedar, Douglas fir, Western yellow pine, redwood, alder, and applewood have been produced in the South.

For some years Indiana has been the leading furniture manufacturing state and has used a larger quantity of the various woods than has any other state. In 1928 North Carolina not only led all the Southern states in the quantity of wood required for its furniture industry but also led all the states. The quantity of lumber consumed by the furniture industry in North Carolina in 1928 was 150,858,000 ft. B. M.; and by Indiana, 149,552,000 ft. B. M. Vir-

The total quantity of 388,906,000 ft. B. M. of lumber used by the furniture industry of the South is nearly one third of the total quantity of 1,119,210,000 ft. B. M. used by the industry throughout the United States.

At the beginning of the furniture industry in the South, only the cheaper grades of furniture were made; but now the finest grades are manufactured and they easily compete with similar grades of furniture from other sections of the country.

The veneer needed for the furniture industry requires high-grade material, and the veneer plants of the various Southern states will soon be in a position to furnish sufficient of this product to meet the expanding re-

⁴ Lumber used in Manufacture—1928, Preliminary Statistics Forest Survey of U. S., U. S. Forest Service.

quirements of the industry in the South.

There is a splendid opportunity for the South to develop its furniture industry to a much larger extent, and in the next few years the trade will undoubtedly receive a large increase of furniture from the several Southern states.

WOOD PULP AND WOOD-FIBER PRODUCTS

The extensive investigations that have been made and are now being made relative to the conversion of wood into wood pulp and wood fiber, and the various purposes for which these products can be used, have opened a wide field for the use of wood that was formerly wasted, and for more profitable uses for the poorer grades of lumber.

The utilization of wood in making wood pulp for use in the manufacture of various products has probably received more attention in industrial research than has any of the other wood-using industries. As a result, there has been a considerable increase in the number of woods that can be satisfactorily used for wood pulp, and there have been many changes in the processes of pulping.

The following woods native to the Southern states are now being used in greater or less quantity in wood pulp: spruce, hemlock, yellow pine, loblolly pine, slash pine, jack pine, poplar, balsam, beech, birch, maple, gum, tamarack, basswood, box elder, buckeye, cedar, chestnut, cottonwood, white pine, and willow.

While some of the more favored of these Southern woods, such as spruce and hemlock, are becoming scarce and high priced, there is a tremendous reserve of other woods in the South that are suitable for paper pulp.

The various woods that have been sold for pulp in the South brought in

1929 an average of \$7.56 per cord for the rough wood.⁵ In two of these states, the price received was \$5.47 per cord. These prices are lower than the average received in other sections of the country.

The availability of this abundant supply of cheap pulp wood, together with the proximity to markets for the pulp, accounts for the present remarkable growth of the pulp industry in the South; and these factors, together with the fact that many of these pulp woods are easily and rapidly reproduced, will cause a still greater development of this industry.

In 1929 there were thirty-six pulp plants listed as in the South,⁶ which had a capacity of one million tons per year based on an operating year of three hundred days. These pulp mills are located in Arkansas, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Of these, the Champion Fibre Company's plant at Canton, North Carolina, is the largest paper pulp plant in this country.

At the present time the principal pulp product of the South is sulphate, or kraft pulp, and the South very properly dominates this pulp field. There should be, and there will be, an enlargement of this kraft pulp industry in the South, for there are now being imported into this country over twelve hundred tons of kraft pulp daily, and the South should be able to produce pulps equal or superior to these imported pulps, and at a cost that should enable southern pulps to replace the imported products.

Kraft pulp is used in the manufacture of brown wrapping paper, paper bags, wood boards and similar products. All the southern mills are mak-

⁵ *The Paper Industry*, Vol. 11, No. 10, 1930.

⁶ *Lockwood's Directory of the Paper and Allied Trades*.

ing the brown kraft pulp, with the exception of the mill at Canton, North Carolina, which is making fine grades of paper, one or two others producing bleached book paper from pine and making pressed wood board, and several recently built mills using semichemical pulping processes.

DEVELOPMENT OF PULP INDUSTRY

The southern pulp industry needs to be diversified if it is to remain in a healthy condition. It should branch out much more than it has done, by making pulps suitable for products of a higher grade than are those made from kraft pulp.

The United States Forest Products Laboratory at Madison, Wisconsin, has developed a method for the production of a bleached pulp from Southern yellow pine and gums which is suitable for book and magazine paper, and is now specifically studying the pulping of Southern woods to develop a strong white pulp particularly from yellow pine. The Laboratory has also demonstrated that a good quality of newsprint paper can be made out of certain Southern hardwoods, such as aspen, Southern black gum, and paper birch, and that others will make a book paper. Recently, Dr. Charles Herty has stated that a newsprint pulp can be made from slash pine. Gums, ashes, birches, maples, and sycamore can be pulped by the sulphite process, and beech by the soda process, and used in the manufacture of book paper. Red cedar and cypress produce a very satisfactory pulp when reduced by the soda or the sulphite process.

With increased production of kraft products, there should be a decided increase in the finer grades of pulp, which bring higher prices and which are used in making the better qualities of paper. This should lead to several sections of the South becoming centers

for the manufacture of fine paper.

In addition to pulp for the manufacture of paper and boards, there is an opportunity for the development of wood-pulp or wood-fiber industries for the manufacture of products which can and will compete with sawn lumber and wood products in their natural form. Mr. Wilson Compton in a recent address said:

Wood fiber board boxes and containers of all kinds have been a familiar product for the last quarter century. But wood fiber boards for building and structural insulation are largely a development of the last few years. There are already fifteen commercially important insulating boards manufactured wholly or in large part of wood fiber. Many of these are widely advertised and have come into extensive use. Fiber insulating boards have already displaced over a billion and a half feet annually of ordinary lumber.

Wood fiber makes the most efficient insulating boards known and at the lowest cost. Recently I have seen an ordinary door, a beautiful product, punched out of a piece of pressed wood fiber made of a species regarded as "inferior" for lumber manufacture. It is not beyond the bounds of possibility,—I might even say probability,—that with the aid of diligent research, economical methods will be devised to convert into wood pulp, and wood chemical products, the lower common grades which now as board lumber are being laboriously sold in glutted markets, at unprofitable prices, to unenthusiastic consumers or to bargain-hunting industries. In that event, wood pulp, and wood fiber products made from present non-utilized materials and from the low grade portions of the log will become a familiar and eventually perhaps universal product of the best lumber manufacturing mills in America.⁷

The South should not only produce a large percentage of the pulp needed in

⁷ Address delivered before the 14th Annual Meeting Pacific Division, American Association for the Advancement of Science, June 19, 1930, at Eugene, Oregon.

this country, but should also have the necessary plants for utilizing this pulp in the manufacture of paper of all descriptions and of wood-fiber products.

Although the production of pulp wood in the Southern states has been increasing constantly, it is confidently expected that this increase will continue. This is particularly true of pulp wood from second growth pine, from yellow pine and slash pine from the Coastal Plain regions, and from certain hardwoods. The consumption of pulp wood in the South for the years 1899,

stock is included under the various industries in which it is used.

For the horse-drawn vehicles industry, which formerly was very large and important in the South, the amount of lumber consumed is constantly decreasing; while the motor-vehicle-industry is becoming one of the important ones. Although there are several substitutes for lumber used in the manufacture of automobiles, there has been in the past five years an increase of nearly one hundred per cent in the amount of lumber used in this industry. In 1928 the total amount in the

TABLE VII—CONSUMPTION OF PULP WOOD IN THE SOUTHERN STATES FOR SELECTED YEARS ^a
(In Cords of Wood)

State	1899	1910	1916	1920	1925	1926
Louisiana.....	*	*	*	*	170,285	*
North Carolina.....	*	152,261	85,709	166,582	*	*
Virginia.....	14,630	89,637	132,736	166,547	288,206	317,058
West Virginia.....	18,534	108,121	127,478	84,725	59,799	*
Other Southern States.....	112,500	136,300	153,005	233,295	397,640	680,689
Total.....	145,664	486,319	498,928	651,159	915,930	997,747

* Included in other states.

1910, 1916, 1920, 1925, and 1926 is given in Table VII.

AUTOMOBILE WOODWORK

As is seen from Table V, there are in the South twenty important wood-using industries mentioned. There are thirty-four others, many of which are very small and use but very little lumber. Some of these will become larger and more important as the dimension or fabricated stock industry becomes more thoroughly developed in the South, and when producers and consumers of this kind of stock become better acquainted with and have a better understanding of each other's problems. Dimension or fabricated

United States was 867,875,000 feet B. M. Of this, 194,950,000 feet B. M. was used in the South.

In addition to the amount of lumber used in the southern automobile industry, a great deal of dimension stock was shipped out of the South to other automotive wood-working plants. Since 1928 several automobile body plants have been located in the South, and this is one of the outstanding evidences of the trend of wood-using industries to move into the South. The output of these new plants is making the South the leader in the production of automobile woodwork.

DIMENSION LUMBER

The ability to procure the right quality of dimension lumber is one of

^a Compiled from statistics of the U. S. Forest Service.

the factors that led to the establishment of these autowood plants in the South.

As defined by the Dimension Lumber Manufacturers' Association,

dimension lumber is hardwood or softwood refined to a point where the maximum waste is left at the mill and the maximum utility delivered for the specific requirements of a particular plant or industry. It is cut-to-order and, in some cases, stock lumber of specified widths, thicknesses and lengths or multiples thereof.

It may be obtained as square lengths, flat lengths, or in specified shapes; also as solid wood or glued-up lumber. The degree of refinement of dimension lumber is always a matter for agreement between the maker and the buyer.

There has been a constant increase in the production of dimension lumber during the past five years and there is every probability that each year will see a continued increase. Dimension stock is and can be made by the small as well as the large companies; but it should not be expected that all sawmill operators can manufacture small dimension stock at a profit, as many factors enter into its production that must be carefully considered before the operator undertakes its manufacture. The trade is demanding a more refined product than was formerly put on the market; and it is to the interests of the industry that the producers take every precaution possible to see that only lumber of good grade goes into dimension stock and that as little rough dimension stock as possible goes on the market.

The automobile industry has realized the economic soundness of small dimension stock and is one of its large consumers. The furniture and chair industries are also using large quantities of dimension lumber. Other industries that are using increasing amounts of dimension stock are sport-

ing goods, agriculture implements, refrigerators, toys, cabinets, floorings, musical instruments, turned articles, and so forth. At present the large percentage of small dimension stock is made from hardwoods, but white pine and yellow pine are beginning to be extensively used.

Dimension lumber will in time replace a considerable percentage of the rough and planed lumber that is now being shipped, which will mean that lumber formerly wasted at the point of construction will be left at the mill to be used in many cases for pulp wood. One thing that will perhaps lend impetus to the use of dimension stock is "packaged lumber." While as yet but little headway has been made in handling dimension stock in standard unit packages, yet many who are intimate with the lumber situation in this country believe that the need is so urgent that in the near future, dimension stock will be handled in standard unit packages.

WOOD TURNING AND COOPERAGE

The lumber used in wood-turning plants can be and should be largely dimension lumber. There is room in the South for several wood-turning plants. From such information as can be obtained, it would seem that a considerable percentage of the "turned parts" of the furniture manufactured in the Southern states is made outside the South. All the "turned parts" required by the furniture industry of the South should be made in southern wood-turning plants from dimension stock of southern mills. This would mean the utilization of a considerable quantity of the smaller lengths of birch, maple, oak, and other hardwoods, a portion of which is now considered as waste.

The cooperage industry is largely a southern industry. Of the slack coop-

erage stock produced in the United States, three fourths is produced in the Southern states, and of the tight cooperage stock, over one half is produced in the South. The woods used in the cooperage industry in the South are ash, beech, birch, chestnut, cottonwood, elm, maple, pine, red gum, and tupelo.

The principal woods used for the staves are red gum, which constitute almost 60 per cent of the total, pine about 25 per cent, and elm about 10 per cent. For the headings, pine furnishes about 40 per cent, red gum 16 per cent, and birch and ash about 6 per cent each. For the hoops, elm is the principal wood used, constituting about 78 per cent of the total.

NAVAL STORES INDUSTRY

The one forest-products industry that is entirely confined to the South is naval stores. Formerly, North Carolina and South Carolina, with their large areas of virgin long-leaf pine forests, were the chief naval-stores-producing states of the South. With these forests nearly destroyed, the industry has moved south and southwest, and now Georgia and Florida are producing by far the greater portion of the country's naval stores. The other states engaged in this industry are Mississippi, Alabama, Louisiana, Texas, South Carolina, and North Carolina.

Indiscriminate turpentineing, no protection of the long-leaf pine forests from fire, and absence of a stock law, are the chief causes of the near extermination of the long-leaf pine in North Carolina and South Carolina, which drove the naval stores industry into Georgia and Florida. Similar methods have come near putting Georgia and Florida in the same condition.

With the depletion of the long-leaf pine in Georgia and Florida, the slash pine, which originally was confined to

the poorly drained flat lands and other moist lands, is now spreading over many areas formerly covered with long-leaf pine. The slash pine is a much more prolific seeder than the long-leaf, and with the Southern states protecting their forests from fire, this slash pine will extend to the drier localities and cover more and more areas formerly occupied by the long-leaf pine. This tree will grow in eastern North Carolina and South Carolina, in the Coastal Plain region of Georgia, in all of Florida, and in the coast region westward to the Mississippi River.

According to the United States Department of Agriculture, seedlings of slash pine one year old are from eight to ten inches high, and trees five years old have a height of six to ten feet and increase two to three feet annually. Stands twenty-five years of age are frequently ten to fourteen inches in diameter at breast height, and from fifty to seventy-five feet tall. The tree not only grows rapidly, but it grows in dense stands which can be thinned satisfactorily by turpentineing in three-year periods and then cutting. In the modern method of turpentineing by making a light single face, it is proved that the tree can be farmed for longer periods, as the wounds tend to heal quickly. The yield of crude turpentine of the slash pine is the largest of any of our native trees, and this pine is destined to play a very important part in retaining and building up the naval-stores industry for the South.

Other purposes not mentioned previously or in Table V, for which wood is produced in the South are: crossties, telegraph and telephone poles, mine timbers, fence posts, excelsior, tannin materials, rayon, distillation, charcoal, and fuel wood. For some of these purposes, the quantity of wood used is very large.

NECESSITY FOR RESEARCH

Through scientific research conducted by the Forest Products Laboratory of the United States Forest Service at Madison, Wisconsin, by the National Committee on Wood Utilization of the United States Department of Commerce, and by the research departments of several of the national lumber organizations, many new uses have been found for wood. It is necessary that appropriations for scientific research in forestry and forest products be increased many times over the present expenditure for this purpose. The people of the Southern states and the forest-products industry of these states must realize that not only the expansion of these industries, but even their maintenance at their present level is absolutely dependent on a more extensive policy of research and more liberal appropriations for this purpose. Research is needed in:

(1) Wood preservation by chemical impregnations and other treatments by which desirable physical properties of lumber may be retained or controlled and thus the wood be made proof against decay, insect attack, shrinkage, warping, and fire;

(2) Properties and new uses of various types of wood pulp and wood fiber;

(3) Determination of the physical and chemical properties of wood, which will enable the lumber and wood-using industries to more efficiently select their material and increase the utility of their products;

(4) Determination of wood chemical derivatives, such as cellulose and lignin, and their commercial uses;

(5) Utilization of a large percentage of the tree that is now left in the woods, and of the waste at the mills.

SOUTHERN PREÉMINENCE IN WOOD-USING INDUSTRIES

From what has been stated above, the South would seem to be the logical section of the United States for the location and the future development of a large proportion of the lumber and wood-using industries of the United States, for the following reasons:

(1) Wood, the raw material required by all these industries, occurs in greater variety throughout the South than in any other section of the country, and these woods when utilized can be easily and perpetually renewed if the forests are protected and the trees harvested judiciously;

(2) Power at reasonable rates is available throughout nearly every part of the South;

(3) Transportation facilities are equal to those of any other section of the country;

(4) There is plenty of efficient labor that can learn to operate any machinery and process, and climatic conditions favor economical operation of plants and living of employees.

Although there are substitutes for lumber in nearly all the important uses except railroad ties, yet the next few years should see in the South a large increase in the number of wood-using plants, which will very materially increase the production of furniture, automobile bodies and other auto-wood work, refrigerators and kitchen cabinets, dimension lumber, "turned parts" for the furniture industry, gates and fencing, crates, boxes and baskets, tanks and silos, wooden ware and novelties, excelsior, and pulp for the finer grades of paper; for our people are not now using lumber from necessity but from choice.

Chemical Resources and Industries of the South

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CHEMICAL industry plays a rôle in southern manufactures twice as important as in the United States at large. This peculiarity is explained by the fact that chemistry in the South depends largely on local resources of great extent, such as petroleum, cotton, and pulp wood. Including thirty per cent of the land area and the population of the continental United States, the Southern states contribute but fourteen per cent of the value of all American fabricated products; yet twenty national chemical industries owe twenty-six per cent of their production to southern plants. Continued industrial development in the South may be expected not only to maintain this ratio of chemical to other activity, but will in all probability increase it, because of the large mineral resources of known extent and the potential chemical resources of vegetable origin and of unlimited extent.

EXPANSION OF CHEMICAL INDUSTRY

That further industrialization of this region may be safely anticipated is indicated by a recent study of the trends since 1914.² To what extent the growth in the past decade is attributable to the inducement of "cheap

labor" is debatable. That southern labor is actually cheaper is indicated in Table I by the fact that the Southern states contribute but 12.6 per cent of the country's wages, while employing 17.7 per cent of the wage earners.³ But labor costs as represented by the wage earning group are not the only consideration in plant economy, nor even the principal one in many cases. More important is the fact that southern labor will not remain cheap as greater demands for its services develop and bring a consciousness of self-value equal to that obtaining in other localities for the same services.

Capital outlay for permanent buildings and equipment is not taking place in the South because of a belief that cheap labor is an inherent characteristic of the region. So long as it lasts it is a pleasant consideration to the enterpriser. But his chief interest in the South must be ascribed to more permanent factors. These include mineral deposits of great variety (as shown by the several state geological surveys), cotton, sugar cane, pulp wood, and other crops favored by southern conditions; in short, raw materials of large extent whose chief mode of utilization involves applications of chemistry.

Exploitation of the native labor supply on the basis of low wages and long hours is being opposed by leaders of more than one Southern state today. Virginia, for example, emphasizes the

¹The author is indebted to Mr. LeVerne Beales, Chief Statistician for Manufactures, Bureau of the Census, for his prompt and thorough assistance in providing early information on census returns; to his wife, for assistance in verifying the statistical compilations; and to Mr. R. W. Quarles of the University of Virginia for preparation of drawing.

²Partridge, *Jour. Industrial and Engineering Chem.*, 22: 412, 1930.

³*Labor in the Industrial South*, Monograph No. 9, Institute for Research in the Social Sciences, University, Virginia, 1930.

merit of other inducements possessing greater permanence, and enterprisers of such international chemical prominence as E. I. du Pont de Nemours and Company and the Allied Chemical and Dye Corporation testify to their similar convictions. The former organization operates three large plants in Virginia utilizing cellulose as a basic raw material; the latter operates the largest nitrogen fixation plant in the Western Hemisphere and is doubling capacity. No one of these plants is yet two years old.

Virginia, site of the first chemical industry in America with exports of glass, potash, and naval stores from Jamestown in 1608, is experiencing development today which promises to convert the James River Basin into America's foremost chemical center. Industrial Rayon at Covington, the Viscose Rayon expansion at Roanoke, and the Chesapeake-Albemarle paper mill at West Point are other examples of lusty Virginia chemical infants hardly a year old whose annual contributions to the nation's products already run into several millions. Scores of progressive chemical industries throughout the South might be cited, all engaged in new and socially beneficial manufactures of exceptional interest.

In West Virginia the Carbide and Carbon Chemicals Corporation manufactures an ever growing number of useful solvents, from ethyl alcohol to vinyl acetate, chiefly from natural gas or petroleum vapors; the Tennessee Eastman Corporation converts forests into a range of essential chemical products typified by acetone and acetic anhydride. Mississippi has its Masonite Corporation, exploding waste wood fibers with steam to yield a new type of insulating material; Louisiana, its Celotex Company, manufacturing from spent sugar cane so much efficient

insulation board that sugar, long a gigantic industry in this state, is spoken of as a possible by-product.

The tung oil developments in Florida are conspicuous because, with modern technique, they are yielding far better China oil than is obtainable from China. In Alabama we find the Swann group, a sort of Southern *Interessen Gemeinschaft*, best known for accepting a carload order for \$40-per-pound diphenyl (then a chemical curiosity) and filling the order in five months at 40 cents per pound. It is impossible within the space permitted this article to mention all those southern industries which deserve special recognition,⁴ and the above samples are selected entirely at random, at the expense of other and often better examples.⁵

ANALYSIS OF CHEMICAL INDUSTRY

Quantitative analysis of chemical industry in the South is manifestly difficult in the face of the complexity and diversification which is encountered on the one hand, and the absence of individual production data on the other. Valuable statistics for groups of industries and individual states are now available, however, in the Census of Manufactures for 1927 (just being released in pamphlet form by the Bureau of the Census), and will be used here. While these data cover only the calendar year 1927, and many new and important developments have occurred since that time, the greater accuracy of these latest available statistics justifies their use in preference to that of incomplete trade journal estimates. One exception, however, has been made in the case of rayon, a chemical industry which has multiplied so enor-

⁴ Aycock, *Jour. Industrial and Engineering Chem.*, 22: 427, 1930.

⁵ Little, *Trans. Amer. Inst. Chem. Engrs.*, 12: II, p. 1, 1919.

mously in the Southern states since 1927 that without later figures a somewhat distorted picture would result. In this case the conservative estimate of the editor of *Textile World* has been used for 1929.⁶

Such analyses of southern chemical industry as have already appeared⁷ differ widely in the choice of index industries—a feature which enables one to reach almost any desired conclusion. The question as to what states constitute the “South” is one which also offers considerable latitude, though to a smaller extent. Since a study of this type should be based upon clear definitions of these two points, they will be briefly discussed.

Twenty representative chemical industries of national significance have been selected as an index and pertinent statistics have been compiled from as many different pamphlets of the Census of Manufactures.⁸ These figures are presented in several ways to bring out a number of relationships not heretofore published, and which, pertaining to a special phase of industry only, are not directly obtainable from the census reports. Their consideration leads to conclusions of much interest to students of the South, with perhaps an element of surprise for those who have failed to appreciate the part played by chemistry.

In selecting the list of chemical industries, consideration has been given to all manufactures listed in the census, and only those have been selected which are closely related to chemistry as essential raw materials or important

products. Further, the requirement of national scope has been imposed, which has meant the omission of locally important but isolated industries, such, for example, as Louisiana's \$83,000,000 sugar refining and her \$4,000,000 ethyl alcohol.

DEFINITIONS OF TERMS USED

The definition of what constitutes a chemical industry today offers considerable difficulty. Science in all forms is now assisting production in almost every line, and chemistry is foremost among these as a tool for standardization, for meeting specifications, and for finding new raw materials and new outlets, as well as for applied research sponsored by the more progressive enterprisers. One of the best studies of chemical development in the South appearing in recent literature⁹ includes such manufactures as the products of steel rolling mills, slaughtering houses, and ice plants. While it is true that chemical control enters into these to no insignificant extent, yet industries of the foregoing type are dependent more upon mechanical features of equipment and material handling methods than upon specific chemical reactions, and may be regarded as chemical engineering industries rather than chemical industries.

In the twenty selections for this study, one or more true chemical reactions enter directly to an important extent into all but four, and in the latter, either the product of the industry is an important chemical raw material, as cottonseed oil, or the industry is vitally dependent upon physico-chemical principles, as in the paint and varnish manufactures.

The second definition involved in this analysis is the composition of the South. Choice of the fifteen states

⁶ Woolf, *Textile World*, 77: 645, 1930.

⁷ Partridge, *Jour. Industrial and Engineering Chem.*, 22: 412, 1930; Hitchcock, *ibid.*, p. 488; Edmonds, *Manufacturers Record*, p. 56, April 25, 1929; Meade, *Trans. Amer. Inst. Chem. Engrs.*, 12: II, p. 39, 1919; Fairlie, *ibid.*, p. 71; Hitchcock, *Chemical Markets*, 26: 4, p. 364, 1930.

⁸ Anon, *Jour. Industrial and Engineering Chem.*, 22: 433, 1930.

⁹ Partridge, *op. cit.*

of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia, is sanctioned by general usage¹⁰ as well as by political and social considerations. Sound arguments are advanced both for and against the inclusion of "border states" such as Maryland or Missouri. McMurry and Parkins,¹¹ eminent geographers, omit Maryland from the fifteen states chosen here, while the *Manufacturers Record*, long a conspicuous advocate of southern development, includes both Maryland and Missouri. Geographic divisions used by the Bureau of the Census as comprising the South are three in number, listed as South Atlantic, East South Central, and West South Central. This grouping would add only Delaware and the District of Columbia to the fifteen used herein, likewise omitting Missouri.

comparison with general industrial development in the same area. Table I presents comprehensive totals for important index items, indicating that while the South possesses thirty per cent of the land area and the population, it contributes but fourteen per cent of the value of the country's manufactured goods with the help of eighteen per cent of the wage earners. More installed horse power per unit of product exists in this region than for the country at large—a factor which undoubtedly explains the slightly higher ratio of cost of materials, supplies, containers, fuel, and power, to value of products.

Comparing the same subjects in the same way, but solely on the basis of the twenty selected chemical industries, the illuminating results shown in Table II are obtained. With nearly twenty-six per cent of the nation's chemical manufactures contributed

TABLE I—GENERAL INDUSTRIAL STATISTICS FOR THE SOUTHERN STATES—1927¹²

	United States	Southern States	Per Cent of U. S.
Land Area, sq. mi*.....	2,973,774	880,106	29.6
Population (1930) †.....	122,698,190	37,095,853	30.2
Number of Establishments.....	191,866	31,925	16.6
Wage Earners (average).....	8,353,977	1,474,901	17.7
Wages, \$1000.....	10,848,803	1,365,809	12.6
Horse Power.....	39,045,940	7,044,604	18.0
Cost of Materials, etc.....	35,133,137	5,052,014	14.4
Value of Products, \$1000.....	62,718,347	8,619,893	13.7

* *World Atlas*, p. 30, Rand, McNally Co., 1927.

† Taken from the *United States Daily*.

The importance of chemical industry in the South can be judged only by

by the South, from thirty-four per cent of the number of chemical establishments, employing twenty-nine per cent of the chemical wage earners, we find that this phase of industry has kept much more closely in step with the growth in population. A higher ratio

¹⁰ Consult references already cited.

¹¹ *Advanced Geography*, p. 94, New York: Macmillan Co., 1921.

¹² Compiled from 1927 Census of Manufactures, U. S. Dept. of Commerce, 1930.

TABLE II—TWENTY REPRESENTATIVE CHEMICAL INDUSTRIES ¹³

	United States	Southern States	Per Cent of U. S.
Number of Establishments.....	10,974	3,700	33.7
Wage Earners (average).....	611,735	179,363	29.3
Wages, \$1000.....	771,216	171,055	22.2
Horse Power.....	6,300,867	1,316,781	20.9
Cost of Materials, etc.....	4,383,307	1,257,067	28.7
Value of Products, \$1000.....	6,998,776	1,789,018	25.6

of cost of materials to value of products appears to exist in the chemical group.

The much greater importance of chemical manufactures in the South already suggested in Table II is quantitatively presented in Table III. Together with the cost of materials and the value of products, the number of establishments devoted to chemical

general industrial level of the South reflected in Table I.

Distribution of the specific chemical industries within the Southern states follows logically upon the preceding generalizations.

In Table IV the value of products of twenty selected manufactures is given as an index. In the second column the

TABLE III—RATIO OF CHEMICAL INDUSTRY TO ALL INDUSTRIES, IN THE UNITED STATES AND IN THE SOUTH ¹⁴

	Per Cent Devoted to 20 Chemical Industries	
	In U. S.	In South
Number of Establishments.....	5.72	11.58
Wage Earners (average).....	7.33	12.17
Wages.....	7.10	12.52
Horse Power.....	16.14	18.70
Cost of Materials, etc.....	12.47	24.90
Value of Products.....	11.16	20.80

enterprises in the South bears uniformly twice the ratio to similar indices for general industry in this region, as compared with the country at large. The ratio for wage earners, their wages, and the horse power required is not quite so high, tending more toward the

¹³ Compiled from Census of Manufactures for 1927.

¹⁴ Calculated from Tables I and II.

magnitude of these industries in thousands of dollars is shown for the entire country, while in the third column the proportions contributed by the South are shown. If these data were presented for the different states, they would reveal still more interesting results as to the distribution of the industries among the several Southern states.

It would be instructive to note, for

TABLE IV—CHEMICAL INDUSTRIES IN THE UNITED STATES AND IN THE SOUTH ¹⁵

Industries	Total Value of Chemical Products in the U. S. (Thousands of Dollars)	Proportion of Total Value of Chemical Products in U. S., Produced in the South (Per Cent)
1. Black, Carbon, etc.....	14,262	75.6
2. Chemicals, n. e. c.....	548,536	10.1
3. Clay Products.....	319,908	16.1
4. Coke, Blast.....	382,013	14.5
5. Cottonseed Products.....	276,338	96.6
6. Explosives.....	72,490	10.9
7. Fertilizers.....	190,385	70.1
8. Gases, liq. and comp.....	50,547	18.1
9. Gas, Manufactured.....	516,705	8.5
10. Lime.....	41,587	24.5
11. Naval Stores.....	39,903	100.0
12. Oils, n. e. c.....	103,388	6.7
13. Paint and Varnish.....	519,010	5.7
14. Paper.....	919,891	6.8
15. Patented Medicines, etc.....	278,243	12.4
16. Perfumes and Cosmetics.....	161,246	6.6
17. Petroleum Refining.....	2,142,649	37.9
18. Pulp.....	218,198	15.7
19. Rayon *.....	167,800	61.9
20. Tanning Materials.....	35,677	26.5
Total.....	6,998,776	25.6

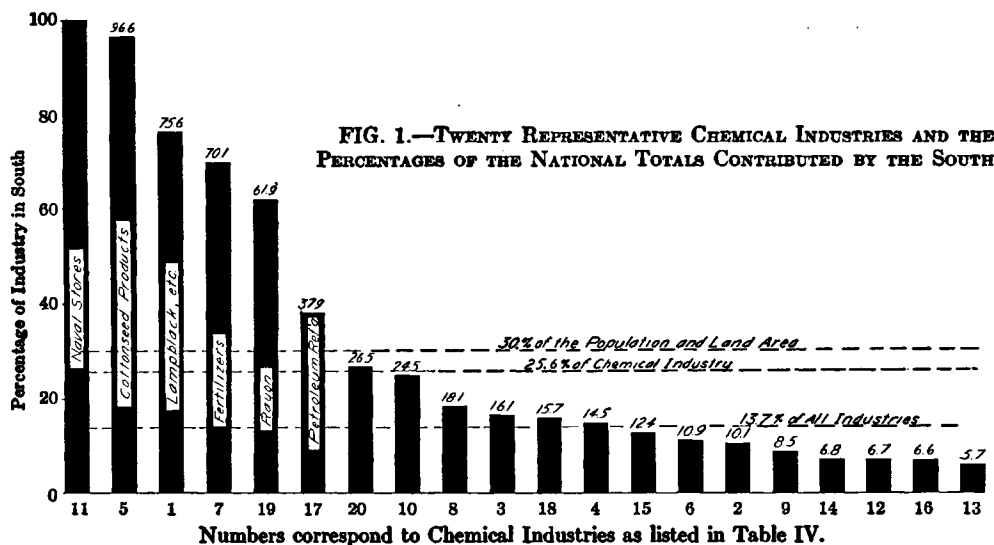
* Rayon figures are an estimate based upon *Textile World*, 77: 645, 1930, for the calendar year 1929, in conjunction with the 1927 Census.

example, that while only three states—Louisiana, Texas, and West Virginia—engage in the manufacture of lamp-black and associated forms of carbon, they combine to produce over seventy-five per cent of the Nation's output. On the other hand, every Southern state has a well-developed ceramic industry, engaging in the manufacture of brick, tile, terra-cotta products, and other refractories, both clay and non-clay. But this type of manufacture is so widely scattered in the United States that the South makes up but 16.1 per cent in this field.

Conclusions of this sort are graphically presented for quick comparison in Figure 1. The purpose of this arrange-

¹⁵ Compiled from 1927 Census of Manufactures, U. S. Dept. of Commerce, 1930.

ment is to bring out the extent to which any one chemical industry has developed in the South, and by comparison with the levels of population, total chemical industry, or all industries combined, to enable prediction of further progress in that line of manufacture. Such a conclusion is obviously dependent upon a number of considerations including markets and local resources. It must be remembered in examining Figure 1 that the magnitudes of the several industries represent percentages and not actual value of products. For example, the fact that one hundred per cent of the naval stores (turpentine, rosin, and so forth) industry is in the South does not signify that this is the leading chemical industry in the region.



Relative rank of the ten largest chemical industries in the South is shown according to value of products, thousands of dollars, in Table V. A comparison of these data with Figure 1 emphasizes the important distinction between the proportion of an industry

Further study shows a certain amount of interlocking of particular interest to students of southern resources. Thus, paper, pulp, and naval stores may be combined under the head of manufactures based upon forest resources; rayon and cottonseed prod-

TABLE V—THE TEN LARGEST CHEMICAL INDUSTRIES IN THE SOUTH ¹⁸

Industry	Value of Products (Thousands of Dollars)	Per Cent of U. S.
Petroleum Refining.....	813,000	37.9
Cottonseed Products.....	266,500	96.6
Fertilizers.....	133,300	70.1
Rayon *.....	103,800	61.9
Paper.....	62,500	6.8
Chemicals, n. e. c.....	55,402	10.1
Coke, blast.....	55,392	14.5
Clay Products.....	51,500	16.1
Gas, Manufactured.....	43,900	8.5
Naval Stores.....	39,903	100.0

* See note * under Table IV.

located in the South and the absolute value of products manufactured by that industry. Naval stores, for example, occupies tenth place on this score.

¹⁸ Calculated from Table IV.

ucts, to a large extent upon cotton; manufactured gas, coke, and petroleum refining, upon mineral resources which are themselves occasionally related. Other mineral resources are entirely

accountable for the clay products; mixed fertilizer manufacturers look to Florida for much of their phosphate; while the miscellaneous chemicals grouped under "Chemicals, not elsewhere classified" depend upon mineral resources in the South which include such important deposits as Virginia's salt and pyrites, Tennessee's phosphate rock, and Texas sulphur.

Despite the comparatively small number of raw materials at present utilized on large scale in southern chemical industry, the great variety of products composing the industries shown in Table IV evidences a high degree of diversification, to which attention has been called in previous publications.

AVAILABLE SURVEYS OF CHEMICAL RESOURCES

To discuss all the chemical resources of the South in any greater detail and treat all of them consistently would require this entire volume. Inasmuch as several very satisfactory surveys have already been published covering several types of resources susceptible of chemical exploitation, this study will dispose of the matter by listing the references in the footnotes. New data are constantly being acquired, probably at a higher rate today than ever before. No survey yet made pretends to be complete; many industrialists must make their own special studies in considering new developments. A number of sections of the American Chemical Society have formed industrial committees whose work supplements already published reports of

State Geological Surveys and Departments of Agriculture.

Of interest in this connection is the announcement that the *Journal of Chemical Education* will publish in the near future a special number devoted to southern chemical progress and resources, prepared by Doctor James E. Mills, former Chairman of the Division of Chemistry and Chemical Technology, National Research Council, and now Head, Department of Chemistry, University of South Carolina. This material will also appear in book form very shortly under the auspices of the Chemical Foundation, New York.

American chemical industry apparently realizes the value of the more permanent assets of known and potential resources, rather than the uncertain and less important factor of "cheap labor." In the industrial growth already recorded, there has been a maximum of chemical development predicated upon existing resources and new methods, with a minimum of the transplantation from established communities which has featured certain textile developments and ruined more than one New England town. Chambers of commerce in their competition for new industries are not always farsighted enough to see that the best developments for their communities as well as for the nation are those which utilize existing but heretofore unexploited resources, or which find new uses for old ones.¹⁷

¹⁷ In addition to works mentioned in footnotes, consult: Cuno, *Jour. Industrial and Engineering Chem.*, 22: 588, 1930; Parmelee, *Chemical and Metallurgical Eng.*, 36: 652, 1929.

Coal Mining in the South

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THE present magnitude of coal mining south of Pennsylvania and of the Ohio River and east of the Mississippi can be gauged by glancing at the accompanying statistical analysis. In 1929 the 1,807 operations in eight coal mining stations in this area¹ produced 44 per cent of the country's soft coal and gave employment to 212,022

per man per day. This coal sold at an average of \$1.60 per net ton f.o.b. mines, or a total return of \$380,719,000.

COMPARATIVE OUTPUT IN 1929

A study of production reports for individual mines indicates the extent to which the available business has been concentrated among the larger enter-

TABLE I—NUMBER OF OPERATING COMMERCIAL MINES, PRODUCTION, VALUE, MEN EMPLOYED, DAYS WORKED, AND OUTPUT PER MAN PER DAY AT COAL MINES IN EIGHT SOUTHERN STATES, IN 1929

State	Number of Active Mines	Total Production (Net Tons)	Value*		Number of Employees	Average Number of Days Worked	Average Tons Per Man Per Day
			Total	Average Per Ton			
Alabama.....	202	17,943,923	\$37,309,000	\$2.08	25,208	231	3.08
Georgia.....	1	44,636	136,000	3.05	102	260	1.68
Kentucky.....	501	60,462,600	93,283,000	1.54	58,649	222	4.64
Maryland.....	78	2,649,114	4,640,000	1.75	3,289	246	3.28
North Carolina..	1	52,180	177,000	3.39	160	260	1.25
Tennessee.....	83	5,405,464	9,122,000	1.69	7,619	228	3.11
Virginia.....	91	12,748,306	20,942,000	1.64	12,053	249	4.24
West Virginia..	850	138,518,855	215,110,000	1.55	104,942	247	5.34
Total eight Southern states.....	1,807	237,825,078	\$380,719,000	\$1.60	212,022	238	4.71
Total U. S. bituminous	6,057	534,988,593	\$952,781,000	\$1.78	502,993	219	4.85

*The value given in this table represents the amount received at the mines f.o.b. cars, minus the selling expense.

men. These men worked an average of 238 days and produced 4.71 net tons

¹Alabama, Georgia, Kentucky, Maryland, North Carolina, Tennessee, Virginia, and West Virginia.

prises. For example, 65.4 per cent of the output in 1929 was contributed by 406 mines in Class 1, 20 per cent by 327 mines in Class 2, 9.4 per cent by 306 mines in Class 3, and the balance

of 5.2 per cent by 768 mines in Classes 4 and 5.²

In looking at the composite averages covering coal mining in the South, one loses sight of the notable differences among coal fields that afford the real basis for everyday events in the coal business. West Virginia, with a 1929 output of 138,518,855 tons, clearly dominated the tonnage.³ Kentucky, with less than half the former's production, ranked second, and Alabama was the third largest producer. The Virginia output was about five million tons below that of Alabama, and Tennessee and Maryland produced 5,405,464 and 2,649,114 tons, respectively. The single mines in Georgia and North Carolina, with their relatively small tonnages, were principally of local interest. In a large measure the status of mining in the coal fields of each Southern state is dependent upon the quantity and the quality of the coal resources and upon the location of these resources with reference to available markets.

COAL RESOURCES OF THE SOUTH

Measured in tonnage only, the total coal reserves of the South are huge. For example, from the beginning of mining to the present, the eight states have produced 4,584,921,000 tons, or only 1.7 per cent of the estimated original content of the coal seams. A study of Table II shows that, arranged in order of their importance, the states of West Virginia, Kentucky, Alabama,

² The U. S. Bureau of Mines divides coal mines into size classes on the basis of their annual production as follows:

- Class 1—More than 200,000 tons.
- Class 2—From 100,000 to 200,000 tons.
- Class 3—From 50,000 to 100,000 tons.
- Class 4—From 10,000 to 50,000 tons.
- Class 5—Less than 10,000 tons.

³ In 1928 West Virginia exceeded Pennsylvania in the production of bituminous coal for the first time in the history of the industry.

Tennessee, and Virginia possess the largest tonnages of unmined coal.

The 393,021,079,000 tons still available in the eight states at the end of 1929 represent 11.5 per cent of the nation's coal. This proportion appears more significant when it is noted that the coal fields of the South include approximately 46 per cent of the total coal resources east of the Mississippi.⁴

From the standpoint of quality, also, the Southern coals present an attractive picture. For example, the reserves represent 25.3 per cent of the Nation's original total bituminous coal and 66.8 per cent of the total semibituminous coal. The latter is an especially prized fuel for both industrial and domestic use, and West Virginia alone contains more than half of the country's probable supply. In addition, there is a considerable quantity of semianthracite in Virginia, of which a moderate tonnage is being produced at present.⁵ Thus, the South has been favored by a larger share of high-quality coals than the ratio of its reserves to the nation's total resources would indicate.

Adequate coals of good quality are not in themselves sufficient to support a thriving mining industry, as is shown by the vast but almost untouched reserves in the Rocky Mountain area. Coal seams must also be favorably situated with reference to current markets. An examination of the geography of the Southern coal fields helps to explain their relationship to the centers of coal consumption.

By far the largest proportion of Southern coal is found in the Appala-

⁴ The estimated total tonnage for the United States includes vast bodies of lignite, subbituminous, and bituminous coal, particularly in Texas and in the Rocky Mountain area, which at present have little commercial value.

⁵ Kiessling, O. E., "Hard Coals Outside of Pennsylvania Make Consistent Gains," *Coal Age*, Vol. 35, No. 1, pp. 29-32, Jan., 1930.

chian region, which extends south from Pennsylvania and eastern Ohio into West Virginia, eastern Kentucky, western Virginia, eastern Tennessee, and on through the northern half of Alabama. When studied from a map, this region represents a broad province of continuous coal, narrowing somewhat in eastern Tennessee and broadening again in Alabama.⁶ In the Piedmont area of Virginia, almost midway

While the geologist's map shows a wide coal-bearing area, mining communities spring up only where high-rank coal is most easily available. Thus, this vast region is divided into numerous mining districts; isolated in some degree from each other. In the study of these separate districts, the almost continuous and interrelated nature of the Appalachian coal beds is sometimes overlooked.

TABLE II.—ESTIMATED ORIGINAL TONNAGE OF COAL IN THE SOUTH ATLANTIC AND SOUTH CENTRAL STATES AND THE RESERVES AT THE END OF 1929, IN NET TONS*

State	Bituminous	Semi-bituminous	Semi-anthracite	Total Production from Earliest Record to End of 1929†
Alabama.....	67,583,000,000	.....	.....	541,464,000
Georgia.....	.....	933,000,000	.....	10,740,000
Kentucky.....	123,327,000,000	.....	.....	873,502,000
Maryland.....	1,507,000,000	6,536,000,000	.....	226,152,000
North Carolina.....	200,000,000	.....	.....	982,000
Tennessee.....	25,665,000,000	.....	.....	214,438,000
Virginia.....	20,749,000,000	400,000,000	400,000,000	268,096,000
West Virginia.....	122,644,000,000	29,900,000,000	.....	2,413,547,000
Total.....	361,675,000,000	37,769,000,000	400,000,000	4,548,921,000

Bituminous coal . . .	361,675,000,000	Total production.....	4,548,921,000
Semibituminous coal..	37,769,000,000	Loss in mining, estimated.....	2,274,000,000
Semianthracite.....	400,000,000	Total exhaustion.....	6,822,921,000
Grand total.....	399,844,000,000	Original tonnage.....	399,844,000,000
		Amounts produced and lost...	6,822,921,000
		Amount available at end of 1929	393,021,079,000

* The data on reserves, as well as the figures on estimated loss in mining, are taken from material published by Marius R. Campbell, Senior Geologist, U. S. Geological Survey. See Campbell, Marius R., "Our Coal Supply: Its Quantity, Quality, and Distribution," in *Proceedings of the International Conference on Bituminous Coal, 1926*, pp. 60-61, Carnegie Institute of Technology, Pittsburgh, 1927.

† U. S. Bureau of Mines.

between the Appalachian province and the eastern coast, is found the small Richmond Basin, and a similar minor outlying coal field is noted in North Carolina.

⁶ Campbell, Marius R., *The Coal Fields of the United States*, U. S. Geological Survey, Professional Paper 100 A.

In western Kentucky, several hundred miles from the Appalachian region, is found the second largest tonnage of coal reserves. This field is an extension of the vast interior coal province which includes the coal-bearing areas of Illinois and Indiana.

ACCESSIBILITY OF MARKETS

With this preliminary description, the importance of the geographic position of certain Southern mining districts in reference to outlets can be readily pointed out.⁷ Keeping in mind that the center of the Nation's coal consumption is represented by a broad belt extending from New York to western Pennsylvania and thence to Chicago, it will be seen that the coal fields of West Virginia, and to a smaller degree those of Virginia, have access to this important market. Because of strategic geographic location, they are able to ship coal west and northwest over through rail routes to the Great Lakes and to the industrial Middle West, or eastward to tidewater at Hampton Roads and Baltimore for coastwise and offshore movement.

Eastern Kentucky, though shut off from ready access to tide, has a large business in the Lake trade, in Ohio, Michigan, and in other Middle Western markets. The western Kentucky fields are favorably situated for business in the Central and Middle Western markets. Tennessee is handicapped in Northern markets by the intervening West Virginia and Maryland districts, in Western markets by the intervening west Kentucky field, and on the south by the Alabama area. Coal from the Alabama field, which is a more or less isolated district, serves the large local demand in the vicinity of Birmingham and moves in some measure westward as far as Louisiana and Texas and east and southeast to the coast.

While complete recent figures on the distribution and the use of Southern coal are not available, some of the principal markets can be indicated from existing data. In 1929, approxi-

mately 23,000,000 tons moved to Hampton Roads and Charleston, South Carolina, for the coastwise⁸ and export business, and 27,000,000 tons were received at lower Lake ports as cargo in the Lake trade. In 1928, Class 1 railroads reported deliveries of about 41,000,000 tons originating in the eight states for use as railway fuel,⁹ while about 39,000,000 tons were used for coke manufacture, principally in the East and the Middle West. A study of coal distribution recently undertaken by the United States Bureau of Mines promises a quantitative survey of the movement from each of the Southern mining districts.

RELATIVE PRODUCTIVITY

Irrespective of quantity, quality, and geographic location of coal seams, there is a fourth factor regarding resources that is becoming increasingly important. This factor is represented by the ease with which the seams can be mined, and is best measured by the amount of human effort required to extract a ton of coal.

In this connection it should be noted that the geologist's estimates of total coal reserves must be somewhat discounted, for they include coal not commercially available at present because of thinness of seam or excessive depth. Yet physical factors are of utmost importance in practical mining and are ordinarily reflected in the daily productivity of the miners. Labor is such a significant item in the cost of extracting coal that the amount of human effort necessary to obtain a unit of product plays a large part in determining the competitive position of a given mining district.

Considerable variations in the daily output per worker among the Southern

⁸ Principally to New England.

⁷ Thom, W. T., Jr., *Petroleum and Coal, The Keys to the Future*, Princeton, 1929, pp. 92-93.

⁹ U. S. Bureau of Mines, *Weekly Coal Report* No. 665, p. 6, April 12, 1930.

coal-mining states are indicated by the figures on "average tons per man per day" in Table I. At the small operations in Georgia and North Carolina the amount of labor required to obtain a ton of coal is very high, and these mines can operate only because of the relatively high sales realization which is possible in a local market that is not readily accessible to coals from districts where physical conditions are less severe.

In Alabama and in Tennessee, where the seams pitch and are faulted, and in the Maryland district, where much of the easiest-mined coal has been exhausted, productivity per man per day ranges from 3.08 to 3.28 tons. In Virginia and Kentucky, a day's labor produces 4.24 tons and 4.64 tons, respectively. West Virginia, with its output of 5.43 tons per man per day, represents the lowest cost per ton of coal in terms of human effort of any of the southern districts, and its showing in this respect is also better than that of the competing states of Ohio or Pennsylvania.

Allowing for certain exceptions, the competitive advantage of high productivity is indicated by the figures on average sales realizations. The conditions in Georgia and North Carolina have already been noted, and Alabama, Tennessee, and Maryland also received larger sales realizations than the average for the South. Kentucky and West Virginia, which in 1929 obtained the lowest sales return of any of the Southern states, also showed the greatest daily productivity per worker.

Although some southern districts require a larger amount of human labor to produce a ton of coal than others, in the past this fact has not necessarily served to check the growth of mining. In the first place, each field has usually an advantage in transporta-

tion costs because of accessibility to markets in a limited area. Secondly, differences in productivity can be, and are, in part offset by differences in wage rates. Moreover, unfavorable physical conditions of mining and even disadvantageous geographic position may be partly overcome by a freight rate structure permitting competition in distant markets.

RIISING TREND OF PRODUCTION

The growth of coal production in most of the important Southern mining districts has been an interesting feature in the generally depressed coal market since 1923. In 1918 the eight coal-mining states produced 162,419,707 net tons, which increased to 193,334,383 tons in 1923. In 1929 the output amounted to 237,825,078 tons, a gain of 46 per cent over 1918. Compared with 1923, the 1929 production of the South shows a 23 per cent gain as contrasted with a 5 per cent drop in coal output during the same period throughout the United States as a whole.

The factors responsible for the accelerated expansion of coal mining in the Southern states date back to the forces set in motion by the events of the World War and the period immediately after.

From 1916 to the early part of 1923 the coal market was almost continuously in a state of chronic undersupply. During these years there were three major crises in the supply of bituminous coal. In the first period of scarcity—August, 1916 to March, 1918—there were no great strikes, and the factor limiting the available tonnage was transportation. The second period of shortage—November, 1919 to late in 1920—was originally caused by a nation-wide strike of the union bituminous miners, beginning November 1, 1919. In the third period

of shortage and high prices—April 1, 1922 to early 1923—the primary cause was a nation-wide suspension of mining, involving practically all union men, which shut down two thirds of the capacity of the bituminous fields of the United States and Canada. The high prices prevailing for coal stimulated improvement of existing operations and the opening of new pits in all coal fields, and in the nine years ending with 1923, 275,000,000 tons were added to the capacity of the country's mines.

STIMULUS OF WAR-TIME FUEL SHORTAGE

With the entire coal industry stimulated by the high price of fuel from 1916 to 1918, the Southern states shared the proportionate gain in business. During this period, car supply rather than consumer demand was the factor limiting production, and any operator who could get railroad cars could sell the coal. Cars were allotted on the basis of mine capacity, and newly opened mines in the Southern districts shared equally with long-established mines in the daily supply. Also, in the South there was more of a labor reserve as contrasted with the notable scarcity of common labor during the war period in the more industrialized areas of the North.

These factors, aided by an already existent freight rate structure that permitted access to Northern markets, greatly furthered the expansion of coal mining below the Ohio river. In 1914 the eight Southern states produced 125,886,649 tons, or 29.3 per cent of the Nation's coal; in 1918 their output was 162,419,707 tons, or 28 per cent of the total. During the half decade closing with 1918, coal mining in the South had expanded, but it showed no proportionate gain over the rest of the country.

GROWTH IN IMMEDIATE POSTWAR YEARS

A further incentive to expansion was provided by a continuance of high prices for fuel until early in 1923 due to a series of labor difficulties.

The great strike of 1919, beginning on November 1 and lasting for approximately six weeks, affected almost all of the coal-mining districts of the North and many of those of the South. The majority of the Southern fields, however, generally lost less working time than the Northern districts,¹⁰ and a number of them were not affected at all.¹¹ In 1920, scattered strikes in the union districts of Illinois and Indiana and in parts of Ohio and Pennsylvania and others in Alabama, West Virginia, and Kentucky aided in maintaining the seller's market, and their effect carried over into early 1921.

The coal shortage of 1922, due to the nation-wide suspension in all union districts from April 1 to the middle of August, initiated modified Government control of distribution. While the strike caused a partial cessation of mining in some of the Southern areas, particularly in the union fields of West Virginia and Maryland, and to a smaller degree in those of Tennessee and Kentucky, the Southern states continued to produce a very much higher proportion of their customary output than did the Northern states. Alabama, being scarcely affected by the strike, increased production; Virginia and Kentucky showed a notable increase in output during the strike months; and in West Virginia and Ten-

¹⁰ Tryon, F. G., and Hale, Sydney A., *U. S. Bureau of Mines, Coal in 1919, 1920, and 1921*, p. 506.

¹¹ Principally the Hazard field in Kentucky and the Kenova-Thacker, Winding Gulf, Pocahontas and Tug River, and Logan fields in West Virginia.

nessee there were only moderate declines in production.

How coal mining fared in the eight Southern states in the stormy post-war years is seen from the statistical record for 1923, a year of truce in labor relations. In that year, these states produced 193,334,383 tons, an increase of 19 per cent over 1918.

SHIFTS IN BUSINESS FROM NORTH TO SOUTH

In 1924 a series of long-delayed market trends became apparent, initiating a depression that has lasted almost continuously to the present. With strikes and car shortages eliminated, the pressure of surplus capacity and changing demand slumped down upon the coal industry with crushing weight. The depression in 1924 was aggravated by the necessity of liquidating the large reserves which consumers had accumulated in anticipation of a possible strike and which the Jacksonville agreement¹² rendered unnecessary, and the market continued dull throughout 1925.

The burden of the depression was heaviest in the union states, which operated under a fixed wage scale, whereas the southern fields were free to readjust wages and thereby obtain the business. For many months after the strike of 1922, wage rates in the nonunion fields were on a parity with the union rates. Reports of wage cuts, however, began late in 1923, and after the Jacksonville agreement was signed most of the nonunion operators reduced the rates first to the 1919 and later to the 1917 level, or even lower. By the end of 1925, practically all of Alabama, Virginia, southern West Virginia, eastern Kentucky, and most of Tennessee were operating nonunion. Against a standard day wage of \$7.50

¹² The period of this agreement was from April 1, 1924 to March 31, 1927.

in the union fields, the nonunion districts were paying nearer \$5.00,¹³ and there were corresponding differences in tonnage rates.

The result in terms of costs of production is seen in the fact that nonunion western Kentucky sold coal in 1925 at an average sales realization of \$1.44 per ton f.o.b. mine, whereas in Indiana, its union competitor, the average sales realization was \$2.02, this difference of 58 cents per ton being a rough measure of the competitive advantage of the lower wage scale in the nonunion field. A like difference, some times more and sometimes less, existed between the average prices of other union and nonunion states.

Despite some temporary increases in nonunion wage rates in 1926, due to the ephemeral effect of the British strike, the competitive advantage remained with the unorganized districts. Responding to differences in cost of production, business was diverted from the northern to the southern fields. Between 1923 and 1926 the production of Ohio decreased 31 per cent, of Indiana 12 per cent, and of Illinois 13 per cent. The production of West Virginia, on the contrary, increased 33 per cent, of Kentucky 41 per cent, and of Virginia 20 per cent. In 1926 the eight Southern states were supplying approximately 10 per cent more of the Nation's soft coal requirements than in 1923.

From the end of the British strike to the present, the Southern states as a group have not equaled their 1926 production, but each year their output has represented a large proportion of the

¹³ There was the widest variation in rates in the nonunion fields, and accurate and complete information does not exist as to the wages actually paid. It is known, however, that many nonunion mines were paying approximately \$4 or \$5 for inside day labor. "Hours and Earnings in Bituminous Coal Mining, 1922, 1924, 1926," *Bureau of Labor Statistics Bull.* 454.

total coal production. In 1929 they supplied 44 per cent of the total bituminous coal output. A six months' strike in the union fields, including those of Illinois, western Pennsylvania, Ohio, and Indiana, resulted to the advantage of the southern districts in 1927,¹⁴ as did another suspension of practically the same duration in 1928.¹⁵

MODIFICATIONS IN THE COMPETITIVE PICTURE

The strike of 1928 was settled by the acceptance of major wage reductions in the union districts, which affected the former competitive advantage of lower labor costs in the southern fields. In Illinois and Indiana the new rate was

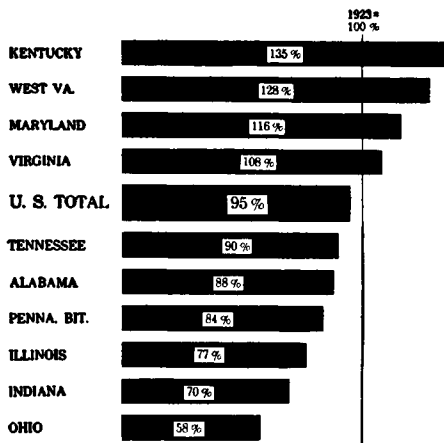


FIG. 1—How production of bituminous coal in 1929 compared with 1923 in the ten leading states east of the Mississippi River.

fixed at \$6.10, and central Ohio returned to the \$5.00 level of 1917. The sharp reduction in wages that occurred in all of the fields north of the Ohio during the period extending from January, 1927, through the first quarter of 1929 are indicated in a recent study of

the United States Bureau of Labor Statistics.¹⁶ With lower wages in the North, the advantage enjoyed by the southern mines when the \$7.50 day rate prevailed in the union areas was at least somewhat curtailed. Also, labor costs of mining have been further reduced in a number of union districts, particularly in Illinois and Indiana, by the extensive use of underground mechanical loading machines. Development in the same states of huge strip mines¹⁷ that produce coal at low cost has further intensified competition.

Thus, with costs of mining definitely tending downward in the North since 1927, with developments in the now famous Lake cargo controversy still unsettled, with coal prices at the lowest levels in more than a decade, and with the Nation's production considerably below the level of 1926, the phenomenal growth of coal mining in the South was at least temporarily checked from 1927 to 1929. While there was no further expansion during this period, the ability of the leading southern districts to intrench with most of their gains in the face of a generally weak market, as shown by the accompanying graph, may be regarded as a considerable achievement.

READJUSTMENT IN THE SOUTHERN COAL FIELDS

The increase in tonnage since 1923 is in itself an incomplete picture of what has happened in the southern coal fields. There, as well as in the North, a period of depression and of difficult readjustment has been experienced. In 1924-1925 and from 1927 to the present, intense competition has forced

¹⁶ "Hours and Earnings in Bituminous Coal Mining 1929," pp. 20-21, *U. S. Bureau of Labor Statistics, Bull. 516*, May, 1930.

¹⁷ Kiessling, O. E., Tryon, F. G., Mann, L., "The Economics of Strip Coal Mining," *U. S. Bureau of Mines, Economic Paper 11*, in press.

¹⁴ Tryon, F. G., Kiessling, O. E., Mann, L., "Coal in 1927," pp. 331-332, *U. S. Bureau of Mines*.

¹⁵ *Idem*, "Coal in 1928," pp. 479-480.

the closing of high-cost mines and the liquidation of surplus capacity. A most important influence has been the continued downward trend of prices since 1926, that reduced if not eliminated profits and that brought great pressure for the reduction of operating costs.¹⁸

It is of interest that, comparing 1929 with 1926, the average sales realization per ton f.o.b. mines in West Virginia, which accounts for more than 50 per cent of the southern tonnage, decreased 2.2 per cent more than the fall in the average per ton value for the entire industry. Tonnage may have increased, but financial prosperity has certainly lagged in the past seven years, and over this period 1,451 commercial mines ceased operation and 25,530 men lost their jobs in the coal fields of the eight Southern states.¹⁹

PROSPECTS FOR THE FUTURE

Due to factors depressing the entire world coal market as well as that of the United States,²⁰ the continued growth of coal mining in the South in the immediate future will no doubt be retarded. It seems probable that the next few years will witness a further displacement of coal by natural gas and possibly by fuel oil. This, combined with lower fuel consumption per unit of usable energy, holds only mod-

erate encouragement for an early increase in the present coal demand. This demand, moreover, can be more than supplied by the capacity of existing mines. Thus, with no new markets on the immediate horizon, expansion of coal mining in the South could take place only through further acquisition of tonnage now produced by other fields.

The probable outcome of such a competitive struggle is more doubtful today than before the complete breakdown of the Jacksonville wage scale in the union areas. As previously noted, coal mining was greatly stimulated during the southern industrial transition, in part through increased demand in the South; but much more important were the inroads of Kentucky and West Virginia coals into Northern markets. These gains were made largely by virtue of lower wage costs. However, with labor costs of mining tending downward in the North in recent years, and with competition between the southern and the northern districts for certain markets tending toward an equilibrium, the growth of mining in the South has already suffered a temporary check. Yet those districts that are strategically located and that can produce high-rank coal under favorable physical conditions, will probably be able to retain approximately their present position and possibly make some gains at the expense of both their southern and northern neighbors.

The ultimate outlook presents a much better picture. In fact, viewed over a long period there is reason for optimism with respect to the southern coal industry. At the 1929 rate of extraction, the coal reserves of the eight Southern states appear large enough to last, with due economy of use, for more than a thousand years—that is to say, beyond the range of valid pre-

¹⁸ The U. S. Coal Commission reported that labor charges represented 70 to 75 per cent of the cost of producing bituminous coal. *Report of United States Coal Commission, Part IV, p. 2026*, Washington: 1925.

¹⁹ In connection with the severe effects of unrestrained competition, it is of interest that recent attempts at major consolidations of coal mining companies in the South have failed. In 1928, the date of the latest effort, a proposed merger of extensive properties in the low volatile fields of southern West Virginia was dropped in the final stage of negotiations.

²⁰ Tryon, F. G., Kiessling, O. E., and Mann, L., "Coal in 1926," pp. 443-458, U. S. Bureau of Mines.

diction. Moreover, if the weight of geological evidence is considered, the services of oil and gas as competitors of coal will be fleeting, and there appears to be a definite limit to the amount of energy available through the development of water power.

Disregarding some unforeseen rev-

olution in power generation, coal promises to be the main energy source of the future, and the South will not only be able to meet its own demands but will also be called upon to supply other areas, particularly with high-rank bituminous and semibituminous coal.

The Power Situation in the Southern Power Province

By THORNDIKE SAVILLE

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DURING the past ten years there has been under way a vast industrial development in a group of Southern states comprising Virginia, North and South Carolina, and Georgia, in the east, and West Virginia, Kentucky, Tennessee, and Alabama in the west. These states have sufficient resources in water and fuel power to supply the growing power needs of the adjacent states of Florida and Mississippi. This entire region of eight states constitutes in a broad way an economic entity which has not been in the past,

and probably will not be in the future, dependent upon sources of power produced from without its borders. This group of eight states the writer has previously designated as forming a Southern Power Province.¹ It is the purpose of this article to analyze the power demands of the region for the past decade, to visualize power requirements of the future, to indicate the extent of power resources available to meet the future requirements, and to describe the various engineering and economic factors affecting present and future power supply.

I. GROWTH OF POWER PRODUCTION IN THE SOUTH

Since 1920 the United States Geological Survey has collected statistics relating to power production by public utility and municipal generating plants. The basic data for most of the discussion and diagrams in this section relating to power development and power output is from this source, with supplementary data from United States census reports. Figure 1 shows graphically and also by figures the amount of total electric energy generated and that produced by water power or fuels in each state.

It is evident at a glance that the states of Florida, Kentucky, Mississippi, and West Virginia are essentially fuel-power states. The logical explanation would be that these states are the lowest in water-power resources, and Table I indicates this to be a fact, except for West Virginia. This state ranks third in potential water power,

but is eighth in output by water power. The reason is twofold. First, coal is cheap and transportation costs are low. Second, the principal rivers have in many instances been paralleled by railroads and highways, and the necessity of relocating these before dams could be built would render uneconomic many otherwise feasible hydroelectric developments.

It will be observed from Table I that in general the developed water power and output by water power in the several states is about in line with the respective rank in potential water-power resources. Besides West Virginia, South Carolina is the outstanding exception, ranking sixth in potential power but third in developed power and water-power output. This is due in

¹"The Power Situation in the Southern Appalachian States," *Manufacturers Record*, April 21 and 28, 1927.

OUTPUT IN KILOWATT HOURS FROM CENTRAL GENERATING STATIONS

WATER POWER 

FUEL POWER 

TOTAL 

MISSISSIPPI

FLORIDA

KENTUCKY

GEORGIA

TENNESSEE

VIRGINIA

SOUTH CAROLINA

ALABAMA

NORTH CAROLINA

1920

TOTAL 65,641,000
WATER POWER 0
FUEL POWER 65,641,000
%WATER POWER 0

132,631,000
12,990,000
119,641,000
9.8

275,760,000
0
275,760,000
0

594,886,000
491,081,000
103,805,000
82.6

572,615,000
441,034,000
131,581,000
77.0

520,834,000
202,762,000
318,072,000
38.9

729,998,000
672,826,000
57,172,000
92.2

549,668,000
399,372,000
150,296,000
72.7

732,627,500
681,173,000
51,454,000
93.0

1921

TOTAL 61,806,000
WATER POWER 0
FUEL POWER 61,806,000
%WATER POWER 0

144,691,000
10,459,000
134,232,000
7.2

285,165,000
128,000
285,035,000
0.04

550,964,000
458,468,000
92,496,000
82.6

489,949,000
346,772,000
143,177,000
70.8

542,606,000
189,691,000
352,915,000
35.0

769,999,000
716,687,000
53,012,000
93.1

474,390,000
315,041,000
159,349,000
66.4

704,616,000
649,040,000
55,576,000
92.2

1922

TOTAL 60,159,000
WATER POWER 0
FUEL POWER 60,159,000
%WATER POWER 0

160,410,000
9,113,000
151,297,000
5.7

314,875,000
100,000
314,775,000
0.04

611,314,000
512,096,000
99,218,000
83.8

512,494,000
342,522,000
170,172,000
66.8

643,343,000
281,909,000
421,034,000
34.6

868,768,000
814,431,000
54,337,000
93.7

664,404,000
353,300,000
310,504,000
53.3

916,564,000
811,715,000
104,849,000
88.6

1923

TOTAL 65,026,000
WATER POWER 0
FUEL POWER 65,026,000
%WATER POWER 0

182,325,000
9,220,000
173,105,000
5.1

352,274,000
96,000
352,178,000
0.03

656,046,000
554,825,000
101,221,000
84.6

649,484,000
442,320,000
207,164,000
68.1

729,641,000
210,349,000
519,292,000
28.8

894,893,000
834,185,000
60,708,000
93.2

623,216,000
550,196,000
73,020,000
66.9

1,313,098,290
1,078,290,290
234,808,000
82.1

1924

TOTAL 74,216,000
WATER POWER 0
FUEL POWER 74,216,000
%WATER POWER 0

218,286,000
10,845,000
207,443,000
5.0

405,194,000
194,000
405,000,000
0.5

748,756,000
643,616,000
104,940,000
86.0

694,078,000
436,861,000
257,164,000
62.9

743,668,000
260,533,000
483,135,000
36.0

945,577,000
869,233,000
76,344,000
92.1

690,087,000
595,448,000
94,639,000
66.9

1,416,315,840
1,243,798,840
172,517,000
87.8

1925

TOTAL 90,927,000
WATER POWER 0
FUEL POWER 90,927,000
%WATER POWER 0

348,134,000
10,819,000
337,315,000
3.4

474,748,000
6,281,000
468,464,000
1.3

660,790,000
488,147,000
172,643,000
73.9

874,973,000
487,994,000
416,979,000
52.3

801,568,000
168,684,000
632,884,000
21.0

881,536,000
580,702,000
300,834,000
65.9

1,169,101,000
560,162,000
608,939,000
48.9

1,479,548,840
918,410,840
561,138,000
62.1

1926

TOTAL 58,667,000
WATER POWER 0
FUEL POWER 58,667,000
%WATER POWER 0

309,670,000
18,219,000
491,491,000
3.6

813,800,000
84,357,000
449,443,000
12.6

710,578,000
613,548,000
97,030,000
86.4

894,015,000
537,229,000
356,786,000
60.4

923,882,000
206,283,000
719,599,000
22.3

1,036,198,000
681,932,000
354,266,000
65.7

1,582,717,000
1,304,093,000
278,624,000
82.4

1,730,360,000
1,023,632,000
706,728,000
59.3

1927

TOTAL 49,831,000
WATER POWER 0
FUEL POWER 49,831,000
%WATER POWER 0

391,743,000
10,483,000
571,350,000
1.6

566,198,000
109,386,000
456,812,000
19.3

709,644,000
616,234,000
93,370,000
86.8

928,592,000
569,464,000
359,108,000
61.3

1,088,601,000
278,428,000
816,173,000
25.0

1,116,832,000
732,914,000
383,918,000
65.6

1,867,079,000
1,532,730,000
334,349,000
82.1

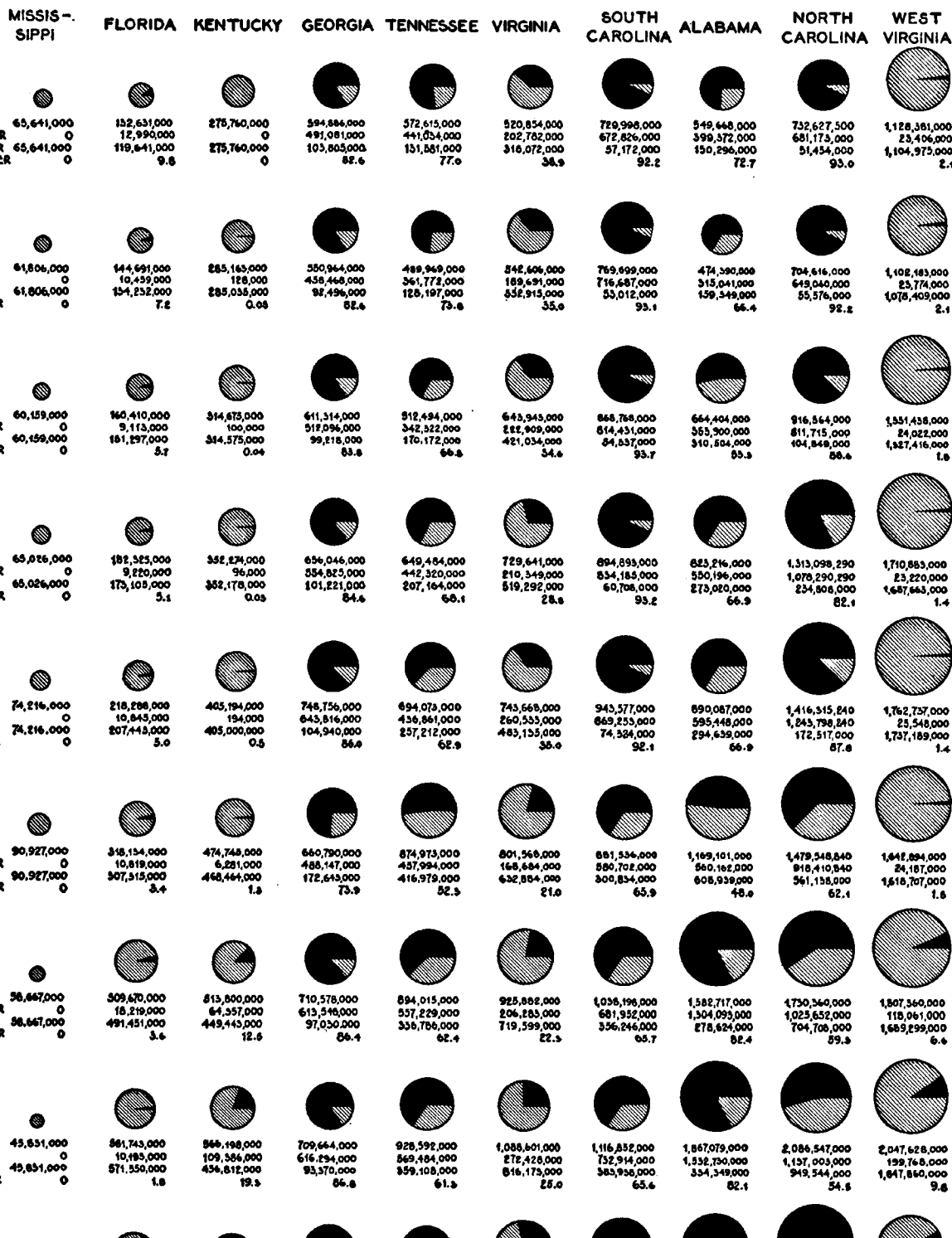
2,086,547,000
1,137,003,000
949,544,000
54.5

OUTPUT IN KILOWATT HOURS FROM CENTRAL GENERATING STATIONS

WATER POWER

FUEL POWER

TOTAL



1920

TOTAL 65,641,000
WATER POWER 0
FUEL POWER 65,641,000
%WATER POWER 0

132,631,000

132,631,000
17,990,000
119,841,000
9.8

275,760,000

275,760,000
0
275,760,000
0

394,866,000

394,866,000
491,081,000
103,865,000
26.6

372,615,000

372,615,000
441,034,000
131,561,000
77.0

520,854,000

520,854,000
202,702,000
316,072,000
36.9

729,998,000

729,998,000
672,826,000
57,172,000
92.2

549,668,000

549,668,000
399,372,000
150,296,000
72.7

732,627,500

732,627,500
681,175,000
51,454,000
93.0

1921

TOTAL 61,806,000
WATER POWER 0
FUEL POWER 61,806,000
%WATER POWER 0

644,691,000

644,691,000
10,459,000
134,252,000
7.2

285,163,000

285,163,000
128,000
285,035,000
0.04

550,944,000

550,944,000
458,468,000
92,496,000
82.6

489,949,000

489,949,000
341,772,000
128,197,000
70.8

542,606,000

542,606,000
189,691,000
352,915,000
35.0

769,899,000

769,899,000
716,687,000
53,012,000
93.1

474,390,000

474,390,000
315,041,000
159,349,000
66.4

704,616,000

704,616,000
649,040,000
55,576,000
92.2

1922

TOTAL 60,159,000
WATER POWER 0
FUEL POWER 60,159,000
%WATER POWER 0

160,410,000

160,410,000
9,113,000
161,297,000
5.7

314,673,000

314,673,000
100,000
314,573,000
0.04

611,314,000

611,314,000
512,096,000
99,218,000
83.8

512,494,000

512,494,000
342,322,000
170,172,000
66.6

643,343,000

643,343,000
288,909,000
421,034,000
34.4

868,768,000

868,768,000
614,431,000
254,337,000
93.7

664,404,000

664,404,000
383,300,000
310,504,000
53.9

916,564,000

916,564,000
811,715,000
104,849,000
88.6

1923

TOTAL 60,076,000
WATER POWER 0
FUEL POWER 60,076,000
%WATER POWER 0

182,323,000

182,323,000
9,220,000
173,103,000
5.1

352,274,000

352,274,000
96,000
352,178,000
0.03

636,046,000

636,046,000
554,823,000
101,221,000
84.4

649,484,000

649,484,000
442,320,000
207,164,000
66.1

729,641,000

729,641,000
210,349,000
519,292,000
28.8

894,893,000

894,893,000
854,185,000
60,708,000
93.2

825,216,000

825,216,000
590,196,000
275,020,000
66.9

1,313,098,290

1,313,098,290
1,070,290,290
234,808,000
82.1

1924

TOTAL 74,216,000
WATER POWER 0
FUEL POWER 74,216,000
%WATER POWER 0

218,208,000

218,208,000
10,843,000
207,443,000
5.0

405,194,000

405,194,000
194,000
405,373,000
0.5

748,756,000

748,756,000
643,816,000
104,940,000
86.0

694,073,000

694,073,000
436,861,000
257,212,000
62.9

743,666,000

743,666,000
260,333,000
483,333,000
35.0

943,577,000

943,577,000
869,233,000
74,344,000
92.1

890,087,000

890,087,000
595,448,000
294,639,000
66.9

1,416,315,840

1,416,315,840
1,243,798,840
172,517,000
87.8

1925

TOTAL 90,927,000
WATER POWER 0
FUEL POWER 90,927,000
%WATER POWER 0

318,134,000

318,134,000
10,819,000
307,315,000
3.4

474,748,000

474,748,000
6,281,000
468,467,000
1.3

640,790,000

640,790,000
488,147,000
172,643,000
73.9

874,973,000

874,973,000
487,994,000
416,979,000
52.3

801,368,000

801,368,000
580,702,000
632,884,000
21.0

881,534,000

881,534,000
590,162,000
300,834,000
65.9

1,169,101,000

1,169,101,000
800,939,000
608,939,000
48.9

1,479,548,840

1,479,548,840
918,410,840
561,138,000
62.1

1926

TOTAL 58,667,000
WATER POWER 0
FUEL POWER 58,667,000
%WATER POWER 0

509,670,000

509,670,000
18,219,000
491,451,000
3.6

613,800,000

613,800,000
64,357,000
449,443,000
12.6

710,578,000

710,578,000
613,546,000
97,030,000
86.4

894,015,000

894,015,000
537,229,000
356,786,000
62.4

925,882,000

925,882,000
206,283,000
719,599,000
22.3

1,036,196,000

1,036,196,000
681,932,000
356,264,000
65.7

1,582,717,000

1,582,717,000
1,304,093,000
278,624,000
82.4

1,730,360,000

1,730,360,000
1,025,632,000
704,728,000
59.3

1927

TOTAL 45,831,000
WATER POWER 0
FUEL POWER 45,831,000
%WATER POWER 0

561,743,000

561,743,000
10,193,000
571,350,000
1.8

566,198,000

566,198,000
109,386,000
456,812,000
19.3

709,664,000

709,664,000
569,484,000
93,370,000
86.8

928,592,000

928,592,000
569,484,000
359,108,000
61.3

1,086,601,000

1,086,601,000
278,428,000
816,173,000
25.0

1,116,852,000

1,116,852,000
732,914,000
383,938,000
65.6

1,647,079,000

1,647,079,000
1,332,730,000
334,349,000
82.1

2,086,547,000

2,086,547,000
1,137,003,000
949,544,000
54.6

1928

TOTAL 50,355,000
WATER POWER 0
FUEL POWER 50,355,000
%WATER POWER 0

636,376,000

636,376,000
17,311,000
619,065,000
2.7

625,149,000

625,149,000
285,393,000
339,756,000
45.7

981,072,000

981,072,000
905,916,000
75,156,000
92.3

936,094,000

936,094,000
706,984,000
249,110,000
73.9

1,168,300,000

1,168,300,000
314,643,000
853,657,000
26.9

1,399,205,000

1,399,205,000
1,264,474,000
134,731,000
90.4

1,694,678,000

1,694,678,000
1,649,058,000
45,620,000
97.3

2,225,332,000

2,225,332,000
1,968,482,000
256,850,000
88.6

1929

TOTAL 56,886,000

470,118,000

715,882,000

1,168,300,000

1,399,205,000

1,694,678,000

2,225,332,000

2,225,332,000

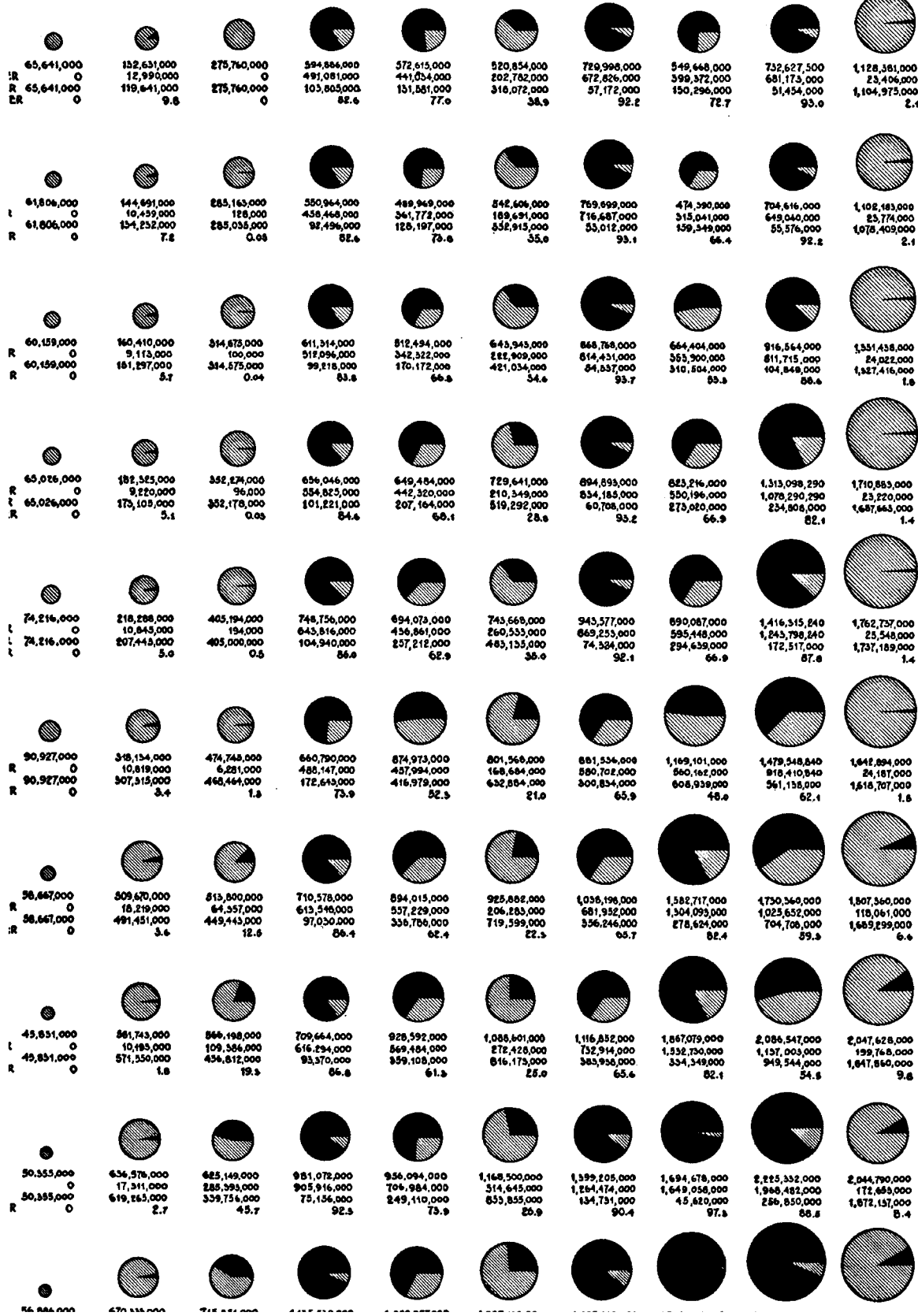


TABLE I—STATES RANKED IN ORDER OF
WATER-POWER RESOURCES, DEVELOPED
POWER, AND WATER-POWER OUTPUT
(U. S. G. S. Data)

State	Rank in Potential Water Power, 50% of Time	Rank in Developed Water Power, 1929	Rank in Output by Water Power, 1929
North Carolina	1	1	1
Alabama.....	2	2	2
West Virginia..	3	8	8
Georgia.....	4	4	4
Tennessee.....	5	5	5
South Carolina.	6	3	3
Virginia.....	7	7	6
Kentucky.....	8	6	7
Mississippi....	9	10	10
Florida.....	10	9	9

part to the intensive development of the Catawba River in both North and South Carolina, where, by large storage reservoirs in North Carolina a highly equalized flow is sent down into South Carolina, and a relatively small amount of water is lost by going over South Carolina dams in times of flood. Much

of this power is exported to North Carolina for use.

In studying Figure 1, it should be kept in mind, that the data depicted refers to power *produced* in each state. The amount *consumed* in these states is in several instances quite different, as large amounts of hydro power generated in Alabama are sent into Mississippi and Georgia for use. Georgia and South Carolina similarly export considerable amounts of hydro power. Power exported from West Virginia and Virginia is mostly steam power. Indication of amount of power consumed in the several states is shown in Table II, from data compiled by the National Electric Light Association. It is not complete, on account of omitting figures for municipal plants and companies not members of the Association. However, it is quite representative, as the energy presented therein constitutes over eighty-five per cent of that generated in the entire region. It will be noted that total exported power exceeds that imported.

Attention is called to the large pro-

TABLE II—POWER CONSUMPTION AND GENERATION
BY PRINCIPAL POWER COMPANIES, 1929
(In millions of kilowatt hours)

State	Consumed in 1929	Generated in 1929	Exported in 1929	Imported in 1929	Ratio Col. 4 Col. 3
1	2	3	4	5	6
Alabama.....	1,520	1,863	408	65	21.9
Florida.....	664	667	24	21	3.6
Georgia.....	1,384	1,142	134	376	11.7
Kentucky.....	812	663	107	256	16.1
Mississippi.....	249	59	1	191	1.7
North Carolina.....	1,708	1,302	61	467	4.7
South Carolina.....	1,026	1,478	468	16	32.3
Tennessee.....	1,130	1,025	24	129	2.3
Virginia.....	1,157	1,310	292	138	22.3
West Virginia.....	1,438	2,135	1,152	455	54.0
Total.....	11,088	11,644	2,671	2,114	22.95

portion of water power produced in Alabama, North Carolina, South Carolina, and Georgia, as shown in Figure 1. These states individually produce a greater proportion of total power by water than do any other states east of the Rocky Mountains.

Two excellent indices of industrial growth are the output of public utility power plants and the installed primary horse power in industry. Details of these elements are shown in Figures 2 and 3. In Figure 2 is presented the total output in kilowatt hours from public utility and municipal plants in each of the Southern states from 1920 to 1929 inclusive, and the total output for the region for the same period. That public utility power output is a fairly sensitive barometer of industrial conditions is generally recognized. Attention is called to the decline in total output in the depressions of 1921 and 1930, that for 1921 being -3.33 per cent, and for 1930 estimated at -4 per cent. Data for 1930 are estimated upon returns for the first nine months. Industrial depressions are felt unequally in different states. In 1930 the decline in power output is most marked in South Carolina, Georgia, and Tennessee.

Alabama shows a greater increase in output for 1930 than does any other state. The relatively large increase in Alabama and the relatively large decrease in Georgia are to some extent artificial and due to excess power generated in Alabama and transmitted to Georgia to supply a deficiency arising from the drought affecting output of hydro plants. Due to interconnections of high tension transmission lines across state boundaries, and for reasons such as that just mentioned, data on power *production* as shown in Figure 2 are representative only in a general way of power *consumption* in a given state. The data for the entire group of states

are quite representative of both power production and power consumption, since practically no power is brought into this region from the North or the West.

In a study made from data available through 1925² the writer included Maryland in the totals, and prognosticated a total output in 1929 of 14,000,000,000 kilowatt hours. Actually, 14,966,734,000 kilowatt hours were generated in that year, indicating that the method used gives as good results as could reasonably be expected. There was an error of seven per cent in the estimate as realized, due chiefly to the great effect of additional power produced at Conowingo in Maryland. For the present study, Maryland has been excluded, both because the state is not strictly in the Southern Power Province and because its output is quite out of line with the growth in output of the region as a whole, on account of recent power development at Conowingo. This is a very large hydro development on the Susquehanna River between Maryland and Pennsylvania.³

The average annual rate of increase in total output from 1920 to 1930 for the Southern Power Province, as will be seen from Figure 2, was about 8.9 per cent; but if we eliminate the years of industrial depression, 1921 and 1930, the rate was 12.3 per cent. However, the rate of increase during the past five years has averaged only 8.2 per cent if values for 1930 be estimated, and 11.5 per cent if the years 1925 to 1929 inclusive are considered. For the same years, 1925 to 1929 inclusive, New England output increased 8.8 per cent per year. For the United States as a whole, the average annual

² *Loc. cit.*

³ Conowingo has a present installed capacity of 378,000 H. P. and an ultimate capacity of 594,000 H. P.

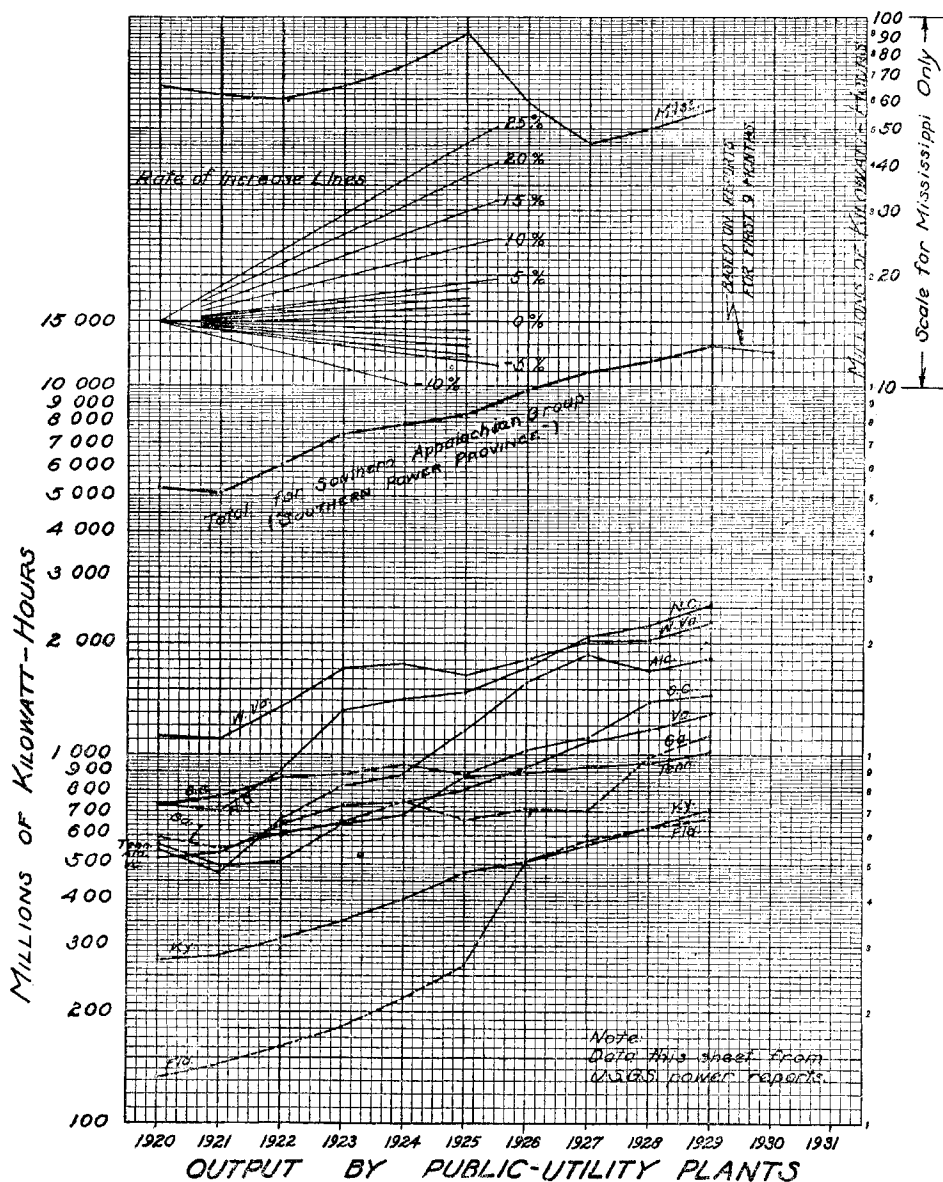


FIGURE 2

rate of increase from 1920 to 1929 inclusive was 9.35 per cent; for the Southern Power Province 10.4 per cent; and for the New England States 6.85 percent.

From the foregoing data and from other considerations to be mentioned later, it appears reasonable to assume for the Southern Power Province an

average annual rate of increase of power production by public utilities of about nine per cent from 1930 to 1940, and about eight per cent from 1940 to 1950. This rate, applied to 1930 estimated total output of 12,438,000,000 kilowatt hours, gives a total output in 1940 of 29,430,000,000 kilowatt

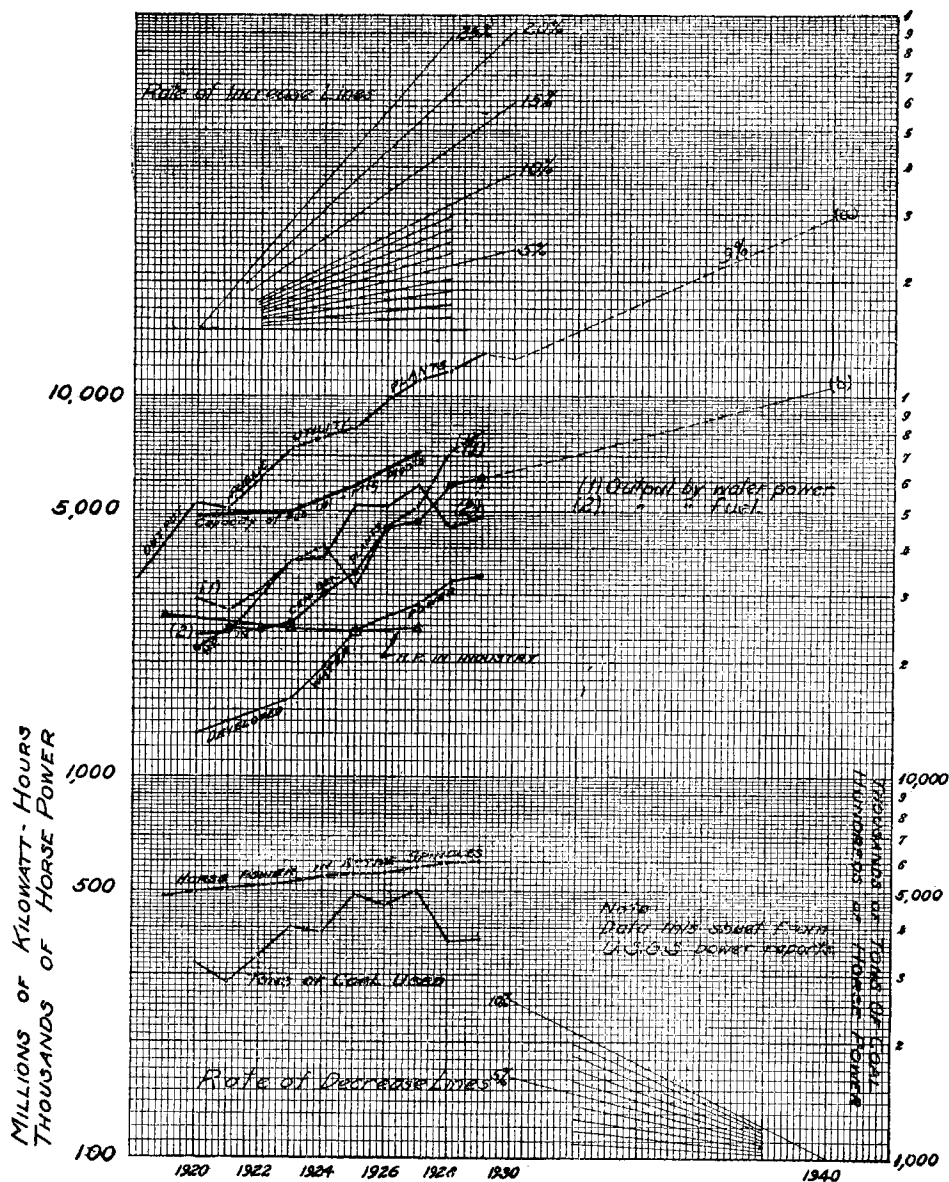


FIGURE 3

hours, and in 1950 of 63,470,000,000 kilowatt hours.

It should be emphasized that rates of increase vary markedly in different states and in different years in the same state, as can be seen from Figure 2. With the exception of West Virginia, the great power-producing states

are those with greatest water-power resources. Since undeveloped water-power resources are still large, those states having such resources will continue to export power to other states, such as Florida and Mississippi; and in considering future power demand, the region as a whole may be con-

sidered, with later attention as to where the power will be generated.

Using the figures for total output previously given, and assuming three hundred operating days per year and fifty-five per cent load factor, the new power capacity required between 1930 and 1940 will be about 5,750,000 horse power. Using a sixty per cent load factor between 1940 and 1950, about 10,500,000 horse power more will be required, or a total of about 16,250,000 horse power between 1930 and 1950. These figures appear large, but the method has previously been used by the writer, with astonishingly close results. Based upon 1925 data, a prediction was made⁴ that by 1930, 2,500,000 additional horse power would be required in public utility plants in this same area with Maryland and the District of Columbia added. Figures

compiled by the United States Geological Survey show an actual increased installation in this period of 2,488,000 horse power.

The prognostications of total output and capacity of central stations are shown on curves (a) and (b) of Figure 3. It will be noted that central-station capacity increased at a considerably greater rate than did power output from 1920 to 1928. This was due to building of plants by power companies in anticipation of future load. Companies are now pretty well built up to load, and new station construction may be expected to proceed at a somewhat lower rate than in the past—a tendency which will be strengthened also by improved load factor and by an inclination on the part of large new industries to generate a part of their power requirements.

II. POWER RESOURCES OF THE SOUTH

The next procedure is to investigate the water-power and fuel reserves of the region to see if they are adequate to supply the estimated future power demand, and to study the proportion of the total which may be supplied by water and fuel power respectively.

WATER-POWER RESOURCES

The economic production of water power is dependent upon the product of fall and quantity of water. Large fall (high heads) may require relatively little water to produce considerable power. Large flow may compensate for low fall. The Southern Appalachian region is more favored than is any other part of the United States in having a topography adapted to the construction of dams, and a relatively high rainfall well distributed throughout the year. The result is that both large fall and high stream flow make

water-power development particularly attractive.

Streams having their sources in the Southern Appalachians at elevations of from three thousand to four thousand feet above sea level, flow to the west into the Tennessee River and to the east into the Atlantic Ocean. The region is geologically "old," and the regimen of the streams well established. In general, the rocks of both the mountain and Piedmont areas are granites, gneiss, slate, and so forth, offering excellent foundations for dams. Only in parts of Virginia and Tennessee are there limestone rocks which in places offer troublesome foundation conditions. The slopes of the mountains are precipitous to the Piedmont area below. The rainfall on the mountains is the highest east of the Rocky Mountains, averaging between fifty-five and sixty inches per year. Local topography, however, plays an important

⁴ *Manufacturers Record*, April 28, 1927.

part in rainfall. Thus, Asheville, North Carolina, has an annual rainfall of about thirty-eight inches, while Hendersonville, North Carolina, only twenty miles distant, has over sixty inches annually. In general, rainfall to the east of the mountains is greater than to the west. The influence of topography is therefore one that has to be considered in hydroelectric undertakings.

North Carolina, the present largest water-power state of the region, owes its preëminence in part to the fact that it has large areas both east and west of the mountains. When rainfall is low to the east it is frequently not so low in the west, and vice versa, thereby permitting large amounts of hydro power to be generated somewhere within the state at all times.

In Tennessee and Alabama the greatest amount of hydroelectric energy comes from development of moderate fall (seventy-five to one hundred and fifty feet) on the streams having large drainage areas, such as the Tennessee and the Coosa. The same conditions exist in many of the hydro-developments of the Piedmont region in North Carolina, South Carolina, and Georgia. On the other hand, developments in the mountains at elevations above one thousand feet generally call for high fall to utilize the relatively smaller quantity of water. The relative effect of large fall (with small flow) and large stream flow (from large drainage area) is seen by comparing two typical water-power developments in North Carolina as follows:

The plants having low fall and large flow usually have the advantage of being located relatively near to the industrial developments of the Piedmont regions and the Tennessee Valley; transmission costs are therefore relatively low. They have the disadvantage of requiring purchase of large areas of comparatively expensive land, and of loss of capacity of reservoirs by silting. The plants having high fall and smaller flow are more remote from load centers, thus involving higher transmission costs. They require smaller areas of less expensive land, and silting is at a minimum, because of generally well-forested areas. Flow is also more uniform and at a higher rate per square mile for the forested mountain regions. The establishment of very large national forests and parks in the Southern Appalachians has been and will continue to be a most beneficial practice, not only from the standpoint of greater uniformity of flow and less silting, but also on account of improved quality of water for industrial purposes. Power companies of the South could well afford to stimulate a more aggressive policy toward reforestation and forest protection.

Figure 4 shows the developed and potential water power of the Southern Power Province, from data compiled by A. H. Horton, of the United States Geological Survey. This region has a total developed water power of 3,412,576 horse power, which is 24.7 per cent of that in the United States and nearly 40 per cent of that east of the Missis-

River	Plant	Fall Developed (Feet)	Drainage Area (Square Miles)	H. P. Installed	H. P. Installed per Foot of Fall
Yadkin.....	Norwood	72	4,600	83,000	1,153
Pigeon.....	Waterville	861	459	139,500	162

issippi. The states of North Carolina, Alabama, South Carolina, and Georgia rank respectively third, fourth, sixth, and ninth in the United States. The first three are exceeded only by New York in developed water power in the East. Table IV shows the magnitude of water-power developments of the principal power companies of the region, to which reference will be made later.

UNDEVELOPED WATER POWER

General. For any understanding of the relation between actual horse power installed at hydroelectric plants and computations of horse power based on flow and fall, a short explanation of the method of arriving at the data is necessary. As stated previously, power produced by falling water is based upon the product of the fall utilized and the quantity of water used.

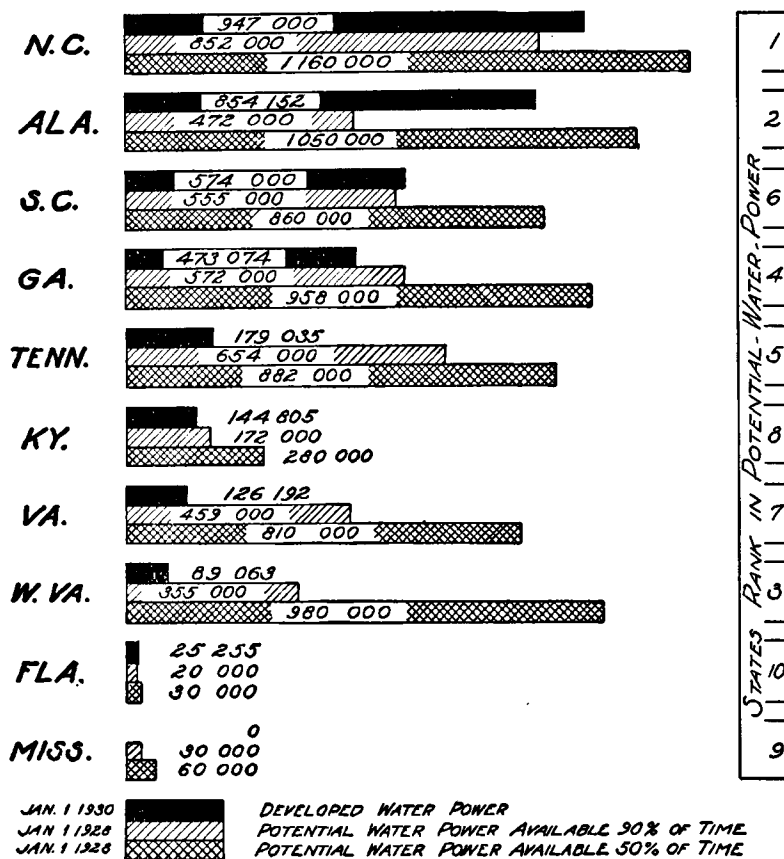
Neither the fall nor the quantity flowing are constant for any given site. The flow, particularly, varies between wide limits, depending chiefly upon variations in rainfall. After heavy rains, abnormally large flows occur. During droughts there is abnormally small flow. The very large flows in a given year may last for only a small proportion of the time, perhaps five per cent. The very low flows may last for somewhat longer periods, say ten per cent of the time in an average year. It is manifestly uneconomical to make an installation capable of using only that flow which is equaled or exceeded all of the time. Such a plant could operate continuously, but at least ninety per cent of the power in the water during normal and high stages would be wasted. Also, it is usually not economical to install water wheels capable of taking the largest flows, as the entire plant would be used to capacity for only a few weeks in the year.

Water-power plants are therefore divided into two major classes—run-of-river plants and plants using storage. The first class takes what water comes to them, and are developed to a capacity to use the flow available from thirty to forty per cent of the time. The second class utilizes water which is stored during floods and sent down stream to supplement dry-weather flow. Such plants are developed to a capacity to use the flow available from fifty to seventy-five per cent of the time. Individual plants may have installed capacities varying widely from these figures, due to special conditions. For instance, two very large recent developments—that at Conowingo, Maryland, on the Susquehanna River (378,000 horse power) and that near Columbia, South Carolina, on the Saluda River (200,000 horse power)—are what are known as “peak load” plants. Such plants are developed to use eighty per cent or more of the total flow of the stream, and can be operated at full capacity for relatively short periods, producing intermittently large quantities of power. This character of plant is economical only when interconnected into a large power system, the output being used to care for the “peaks” in power consumption, and the normal load being carried by other hydro or steam plants.

With the variety of possible extent to which a given site may be developed, actual installation is predicated more upon local load conditions than upon any definite percentage of time a given flow in the stream is available.

U. S. Geological Survey Estimates. In making estimates of potential power over the entire country, the economics of each undeveloped site cannot be studied or even known. Consequently, the United States Geological Survey has based its estimates of potential power upon the fall available and on

POTENTIAL AND DEVELOPED WATER POWER SOUTHERN POWER PROVINCE



NOTE
Data on this chart from U.S.G.S Power Reports

FIGURE 4

two different conditions of flow: (a) that available ninety per cent of the time, regarded as equivalent to "primary power"; and (b) that available fifty per cent of the time, regarded as representing the average installation at "run-of-river" plants. Large storage will materially increase the amount of power available ninety per cent of the time, but will have less effect upon that available fifty per cent of the time. Actual installation will probably nearly follow the amount of power available fifty per cent of the time, and this is

the basis of potential power shown in Figure 4. On this basis there is a total of 7,070,000 horse power in potential water power in the Southern Power Province, which is 42.2 per cent of that east of the Mississippi. Figure 4 shows the comparative standing of the several states with relation to potential water-power resources, but should not be considered as representing possible installed capacity in plants. The latter information is given in Table III.

It should be pointed out, however,

that these estimates are for twenty-four-hour horse power; that is, they are based on an assumption that plants will run twenty-four hours every day at the full capacity of the development. As a matter of fact, the average power system in the South has a load factor of about fifty per cent. That is, the ratio of the maximum load which the system has to carry say for thirty minutes, to the average load for the year, is about fifty per cent. We might, for instance, store water behind a dam for twelve hours, letting the twenty-four-hour flow go through the turbines in the remaining twelve hours. This would enable us to double the capacity of the turbines which would be installed on a twenty-four-hour flow basis.

If a load factor of fifty per cent be applied to water-power developments, we at once double the installed capacity based upon power available fifty per cent of the time for twenty-four hours in the day. This gives a total probable plant capacity in potential power of 14,140,000 horse power. If we deduct the present installed power of 3,412,576 horse power, we have left for future development 10,727,424 horse power. This is shown in column 4 of Table III.

In the preceding discussion an attempt has been made to point out very briefly that the extent to which a given site may be developed depends among other factors upon: (a) flow; (b) fall; (c) storage available at site and at other developments on the same stream; (d) relation of plant to interconnected power system; (e) operation of plant to carry base load, peak load, or a combination of both with fluctuation of stream and load; and (f) load factor of plant.

Manifestly, if all of these factors could be analyzed, a much more accurate estimate of actual plant installa-

tion could be made. The estimates of the United States Geological Survey shown on Figure 4 do not, and could not when made, take these factors into consideration, because of lack of detailed river surveys. These estimates, which are those most commonly quoted as showing potential water power available, are likely to be quite wide of the mark when applied to present or future plant installations. Thus, in North Carolina potential twenty-four-hour power available fifty per cent of the time is given as 1,160,000 horse power. Actual installations total 947,000 horse power. This would indicate that there is practically no undeveloped power, which is well known to be in error. If a load factor of fifty per cent be used, total potential power is 2,320,000 horse power and there remains to be developed some 1,373,000 horse power, which is more nearly correct. We may, therefore, as one index of water-power reserves, consider the estimates of the potential power available fifty per cent of the time on a fifty per cent load factor basis, and arrive at a total of undeveloped water-power resources of 10,727,424 horse power.

U. S. Engineer Corps Estimates. During the past five or six years very extensive power, navigation, and flood-control surveys have been made by the Engineer Corps of the War Department on all of the major streams in the South. Very few reports of these surveys have yet been published, but through the courtesy of the Chief of Engineers, the River and Harbor Board, and the Division Engineers of the South Atlantic and Gulf Divisions, the writer has been furnished with preliminary and tentative data on the undeveloped water-power resources of the region. These surveys have attempted to analyze each stream in considerable detail, and have taken into

account the various factors noted at the beginning of this section. They furnish the most accurate estimates yet available. The preliminary and tentative estimates of undeveloped water power as compiled from these sources are shown in Table III. On certain streams for which the Engineer Corps of the War Department has not com-

twenty-four-hour power and a hundred per cent efficiency, the writer has applied a load factor of fifty per cent, and eighty per cent efficiency, to make the data comparable with other estimates. In column 2 of Table III are shown the estimates of undeveloped water power in the Tennessee River Basin, as reported by the United States

TABLE III—ESTIMATES OF UNDEVELOPED WATER POWER IN SOUTHERN POWER PROVINCE *

State	H. P. in Plant Capacity Outside Tennessee Basin †	H. P. in Plant Capacity in Tennessee Basin ‡	Total H. P. in Plant Capacity	U. S. G. S. Estimates of Potential Power Less Developed Power, 50% Load Factor	H. P. in Plants Under Construction
	1	2	3	4	5
Alabama.....	986,260	804,000	1,790,260	1,245,848	
Florida.....	7,240		7,240	34,745	
Georgia.....	1,448,850		1,448,850	1,442,926	60,000
Kentucky.....	650,000	534,000	1,184,000	415,195	
Mississippi.....	207,910		207,910	120,000	
North Carolina.....	1,175,000§	1,252,000¶	2,427,000	1,373,000	140,000
South Carolina.....	1,612,000		1,612,000	1,146,000	300,000
Tennessee.....	540,000	5,100,000	5,640,000	1,584,965	
Virginia.....	468,000||	99,250	567,250	1,493,808	100,000
West Virginia.....	1,250,000		1,250,000	1,870,937	340,000
Total.....	8,345,260	7,789,250	16,134,510	10,727,424	940,000

* In general, estimates are based on 50% load factor and 80% efficiency.

† Data from surveys by U. S. Army Engineers unless otherwise indicated.

‡ Data from House Doc. 328, 71st Congress, 2nd Sess., 1930 unless otherwise indicated.

§ Includes writer's estimates of 50,000 H. P. on Dan River, 143,000 H. P. on Roanoke River, and 50,000 H. P. on New River.

|| Includes writer's estimates of 300,000 H. P. on Roanoke, James, and New Rivers.

¶ Includes writer's estimates of 216,000 H. P. on Little Tennessee River by Aluminum Company of America and 30,000 H. P. on Watauga River.

pleted or made estimates, the writer has included data obtained from other power surveys.

In Table III, column 1 shows the estimates of the United States Engineer Corps surveys with relation to estimated feasible plant installation at undeveloped water-power sites. Where estimates were made on the basis of

Engineer Corps in House Document 328, 71st Congress, 2nd Session. The totals of columns 1 and 2 are given in column 3, and indicate an estimate, based in general on actual field studies, of 16,134,510 horse power in undeveloped water power. Tennessee and North Carolina each have over 2,000,000 horse power at undeveloped sites.

In column 4, for comparative purposes, the estimates of the United States Geological Survey are shown. The writer has used the figures for total potential power available fifty per cent of the time, applied to it a load factor of fifty per cent and deducted the developed horse power to give estimated undeveloped water power. The results naturally vary considerably from those in column 3, for the reasons previously stated. Attention is particularly called to estimates for the Tennessee River Basin in Tennessee. The results of very exhaustive field studies show undeveloped water-power possibilities of 5,100,000 horse power. This takes into account the effect of storage and nearly complete regulation of stream flow. The estimates of the Geological Survey, made before such data were available, and based on general values of fall and flow, give only 1,584,965 horse power for the entire state. To a much smaller extent the same situation obtains in the other states, and therefore the total as given by Geological Survey figures is naturally considerably smaller than that arrived at from field studies. The writer considers the estimates in column 3 as being the most accurate yet made.

The estimates of column 3 are regarded not only as showing the relative rank of the several states with regard to undeveloped water-power resources, but also as indicating a reasonable limit to which hydroelectric plants may be constructed in the future, as market for power and economic considerations make practicable the development of new sites, many of which are not susceptible of economic development at present.

TENNESSEE RIVER BASIN

It has already been pointed out, and is shown in Table III, that the great-

est concentration of large undeveloped water power in the Southern Power Province is located in the Tennessee River Basin. The undeveloped power in this Basin, amounting to approximately 7,800,000 installed horse power, is forty-eight per cent of the total estimated undeveloped power of the region. It is located within practicable transmission distance of the present and probable future principal industrial areas. Muscle Shoals, Dam No. 3 (fifteen miles above Muscle Shoals), and the Cove Creek reservoir play an important part in its development. For all of these reasons, special consideration must be given to this Basin in any account of southern power resources.

The surveys and investigations prosecuted under the direction of the Army Engineers with respect to power, navigation, and flood-control studies on the Tennessee River and its tributaries in North Carolina, Tennessee, Alabama, and Kentucky constitute the most extensive and detailed work of its kind ever attempted. This work has been carried on under various acts of Congress since 1922, and has cost over \$900,000. The final report will be issued soon as House Document 328, 71st Congress, 2nd Session, and will constitute a classic in its field. Through the courtesy of the Chief of Engineers and the River and Harbor Board, the page proof of this report has been made available to the writer in preparing this article. Colonel Harold C. Fiske, retired, United States Engineer Corps, was responsible for much of the original conception of the scheme and the direction of the first five years of its prosecution. Completion of the investigation and preparation of the final report have been directed by Lieutenant Colonel Lewis H. Watkins, United States Engineer Corps.

No adequate summary of the results

of this investigation can be given in the space permitted in this article. The report outlines methods by which the Tennessee River and all of its major tributaries may be developed as a great interconnected and coördinated power system, with adequate provision for improvements to navigation and benefits from flood control. When completed, the entire recommended system would consist of about a hundred and fifty dams and power houses, with necessary transmission lines and some steam auxiliary plants. The hydro plants vary in installed capacity all the way from 300 horse power on small tributaries to 610,000 horse power ultimate capacity at Muscle Shoals.

To make the recommended hydro installations warranted, requires the development of most of the larger projects, both on the main river and the tributaries, to provide regulation of stream flow by storage. In addition, steam auxiliary plants are required to supplement hydro plants in periods of low water. The completed hydro system would have approximately 7,789,250 horse power installed in new plants and additions to present plants. Of this, about 5,100,000 horse power would be in the state of Tennessee, and 3,200,000 horse power of this is on the main Tennessee River. The remaining 2,689,250 horse power is distributed among the states shown in column 1 of Table III. North Carolina and Alabama are the chief beneficiaries. To make this installation effective in producing primary or firm power would require only 773,000 horse power in steam auxiliary.

The complete system would be capable of producing a total of about 25,000,000 kilowatt hours of primary power, of which about half would be on the main river and half on the tributaries. The output is nearly

double the total now produced in the ten states of the Southern Power Province. The cost of this power at the switchboard would average $4\frac{1}{3}$ mills per kilowatt hour, which is cheaper than the production cost of primary power in most large public utility power systems in the South at present.

In addition to a great and highly regulated power development, it would provide, by locks in the dams, for a navigable depth of nine feet from the canalized Ohio River to Knoxville (about 650 miles) and for depths of from nine to six feet for considerable distances up all of the major tributaries. Provision would be made whereby the storage dams, even though used for power purposes, would be effective in reducing flood heights. Had the system been in operation during 1926, flood heights would have been reduced eight feet at Knoxville and twenty feet at Chattanooga, thereby preventing most of the damage which occurred. While no doubt future studies will indicate desirable changes in the details of the scheme, it is felt that, taken as a whole, it represents with considerable exactitude the potential water-power resources of the region and the method for their most economic development.

RECOMMENDATIONS

Manifestly, a project of this magnitude, estimated to cost \$1,200,000,000, must be carried out over a considerable period of years, as demands for power and other economic factors justify undertaking different parts of it. To provide for more immediate power demand; to make possible more effective use of Muscle Shoals; and to produce a minimum navigable depth of nine feet on the Tennessee River to Knoxville, a partial system is suggested, consisting of seven new dams on the main river. This system is

indicated in Figure 5, which also shows proposed developments on the Clinch River including Cove Creek storage reservoir. The seven new dams would have a total installed capacity of over 2,600,000 horse power. In addition, it is suggested by the District Engineer that the Muscle Shoals plant be increased to a total of 445,000 horse power by the installation of additional units for which provision already exists.

The Chief of Engineers has recommended, and Congress has adopted, a project providing that, as the river is under improvement for navigation, the interests of the Federal Government shall be served by the construction of thirty-two low navigation dams between the mouth and Knoxville, at a cost of about \$75,000,000. At none of these may any considerable quantity of power be generated. Equivalent navigation facilities in the seven alternative high-power navigation dams will cost only \$30,000,000. The Chief of Engineers has recommended and Congress has enacted that any two or more of these low dams may be replaced by one of the high power dams provided the latter is constructed by private interests, states, or municipalities, under the provisions of the Federal Power Act, the Government contributing a part of the cost in the interest of navigation.⁵

⁵ The Act of Congress provides: "that in case high dams are built before the United States shall have built the projected locks and low dams which are to be replaced, the United States shall contribute to the cost of the substituted structures an amount equal to the estimated cost of the works of navigation for which substitution is made." If a complete system of high dams be built before the Government constructs any of the low dams, the Government would contribute a total of \$75,000,000 to the cost of the system. Furthermore, if after the United States shall have built the projected low dams and locks, private interests desire to replace them by high dams they may do so but must pay the entire cost of the new structures including navigation facilities.

It very distinctly devolves upon the Southern Power Province to make every effort to have the high dams constructed if the full benefit from power at Muscle Shoals and other Tennessee River developments is desired. The states of the region might well attempt to assist in the solution of this problem, complicated as it is by Congressional delay in the disposition of Muscle Shoals, to the end that this great power-producing stream shall not be cluttered up with a large number of small navigation dams.

MUSCLE SHOALS

No discussion of the power situation in the South is complete without reference to Muscle Shoals, with allied subjects. The controversy over its disposition has, during the past ten years, given the general public and even economists a very erroneous idea as to its present significance. With proper development of headwater storage, or with adequate provision for disposal of its power, Muscle Shoals might become one of the greatest power-producing plants of the country. At present, except in the emergencies of droughts, it is an almost negligible factor in southern power production.

The Tennessee River at Muscle Shoals, like most streams of the region, fluctuates greatly in flow. The primary power in dry years does not exceed 100,000 horse power. At other times the flow is more than sufficient to utilize the present installation of 260,000 horse power or even the ultimate installation of 610,000 horse power. Periods of such high flow are of relatively short duration and cannot under present conditions be effectively utilized. It will be seen from Table V that Muscle Shoals production was not a considerable factor in 1929, being only 1.3 per cent of the total output of the region, and being exceeded by that

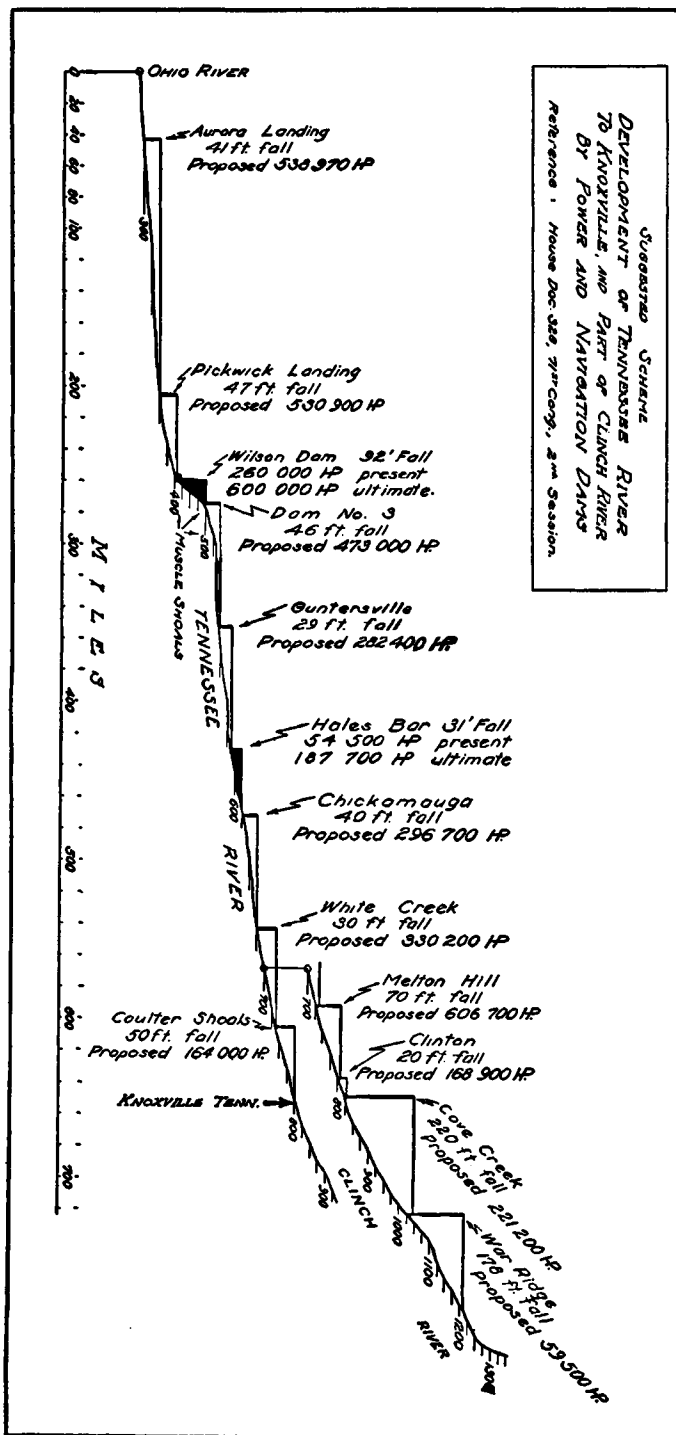


FIGURE 5

of several hydro plants in the section. Its present installed capacity is 7.65 per cent of the total developed water power. The discrepancy between the relation of the output to the installed capacity is clear indication that Muscle Shoals is not producing what it could even with the present installation. Actually, the power output is about twenty per cent of that which it would produce if the power could be disposed of. To place Muscle Shoals in the position it ought to occupy as a great power-producing plant, three things are essential, as pointed out in the Tennessee River Report:

(1) "Authority to lease the plant or sell the available power under long term contract." At present, the only purchasers for Muscle Shoals power are the Alabama Power Company and the Tennessee Electric Power Company, which own the only transmission lines connecting with the plant of sufficient capacity to carry the entire output, and which can distribute the power in Alabama and Tennessee and transmit it to other states. The present contract with the Government is revocable on short notice. Under such conditions, naturally, a power company cannot consider this power as reliable or feel secure in considering it in connection with its construction program. It has to provide its own entirely independent plants, capable of supplying its demands if the Government should dispose of Muscle Shoals. Use of Muscle Shoals power at present is chiefly only to save operation of steam auxiliary plants during low stream flow. Thus, in the present low year, by using Muscle Shoals power, the Alabama Power Company has not had to operate its steam plants nearly to capacity. This use of Muscle Shoals power, largely exported by the Alabama Power Company⁶ to Tennessee, Mississippi,

⁶ See Table II

and Georgia, is chiefly responsible for the increase in total output for Alabama in 1930, as compared with a decrease in most other states. In the low water year of 1926 Muscle Shoals produced for sale approximately 430,000,000 kilowatt hours. In the high water year of 1929 it produced for sale only 165,821,000 kilowatt hours, when of course its productive capacity was greater than in 1926. During the past three years seventy-two per cent of the power generated at Muscle Shoals was exported from the state. The single Tallulah Falls plant of the Georgia Power Company produces 182,636,000 kilowatt hours in an average year. Muscle Shoals (Wilson Dam) produced less than this in 1929, but could generate nearly ten times this amount if arrangements with power companies were made to utilize it under a contract or lease covering ten years or more.

(2) By installing additional units up to a total of 450,000 horse power with sufficient steam auxiliary to make most of this constant (primary) power, a higher sales price for all of the output would result. By construction of Cove Creek storage reservoir, three hundred miles upstream on the Clinch River, but having a great regulating effect on all lower plants, the total installation of 610,000 horse power would be justified.

(3) The third essential is construction of a regulating pool below Muscle Shoals to iron out daily fluctuations in river level due to operation of the dam.

Undoubtedly if Congress would agree to item 1, with provision if desired for power for operation of the nitrate plant or for experiments on fertilizer production, arrangements could readily be made whereby the interconnected transmission systems of the Southern Power Province, plus systems to the South and the West, would absorb at a profit to the Government most of the

output of the full installation at the present Muscle Shoals plant. The District Engineer feels that there already exist sufficient steam auxiliary plants in the region to enable Muscle Shoals power, up to an installation of 450,000 horse power, to be sold cheaper than competing power. As the full capacity of the nitrate plant requires less than 100,000 horse power, there would be ample surplus power for sale, even if the Government desired to operate this plant.

VARIOUS PROPOSALS

The only full, complete, and economic use for the greater part of Muscle Shoals power is to distribute it over high-tension transmission lines to regions within a radius of 150 to 300 miles where markets exist. Any proposal for this plant such as was made by Mr. Ford or is contemplated by the pending offer of the Air Nitrates and the American Cyanamid Corporations is virtually a tremendous subsidy to a single industry at financial loss to the Government, and would result in higher cost of power to a very large area, with many concomitant disadvantages.

The writer condemned the Ford proposal and urged acceptance of the offer of the Associated Power Companies as the only reasonable alternative before Congress at the time, by which the South would adequately benefit from Muscle Shoals. Another pending bill provides for operation of the Muscle Shoals projects by a Farmers Federated Fertilizer Corporation, and frankly proposes a subsidy to the farmers at Government expense by production of cheaper fertilizer, with added provision for sale of surplus power for distribution. This bill seems to the writer to be less prejudicial to the public interest than either of the proposals mentioned above.

Senator Norris proposes a Government Muscle Shoals Corporation, with authority to operate Muscle Shoals and later Cove Creek, in the combined interests of power production and fertilizer manufacture or experimentation, with provision for sale of surplus power for general distribution. This appears as possibly the best compromise now available for this vexing situation. It further offers an opportunity to set up a "yardstick," if such be desirable, as to the costs of producing electric energy in the region, and might operate as a check upon excessive power costs over a wide area. Its success would be largely determined by the character, the ability, and the judgment of the directors appointed by the President. The writer personally feels that the proposal for separation of the power and fertilizer elements at Muscle Shoals is the most logical. It would be possible to provide for long-term lease of the power properties under the provisions of the Federal Water Power Act and such other safeguards as might be desired, and to lease or operate the fertilizer properties or projects with provision for the supply of power to them at cost.

All developments on the Tennessee River itself and some of those on tributaries must be made under authority of the Federal Power Commission. Application for preliminary permits to construct all but Dam No. 3 and the Gunter'sville project on the main river,⁷ and numerous developments, including Cove Creek, on the major tributaries, have been filed with the Commission. The total installed power contemplated in pending applications is 773,000 horse power. There are many conflicting applications, several of which are predicated upon the construction of the Cove Creek storage dam. The Federal Power Commission has voted not to consider

⁷ See Figure 5.

any application involving developments on the Clinch River, including Cove Creek, until Congress has come to some decision regarding the disposition of Muscle Shoals. The result is that the delay of Congress in these matters is postponing the development of coördinated power, navigation, and flood-control projects on the Tennessee and Clinch Rivers, which include those most susceptible of immediate use and benefit.

FUEL-POWER RESOURCES

Even in an essentially water-power region such as the Southern Power Province, a considerable amount of power must be produced from fuel. Much of this is at present and will continue to be generated in steam plants. Coal is and will continue to be the major source of fuel, although the last year has witnessed a large increase in use of natural gas and some increase in use of oil as fuel.

The coal reserves of the region are immense, constituting as they do the major sources in the United States. In Tennessee and West Virginia there are

usable reserves estimated at eighty-five billion tons. There are extensive workable deposits in Virginia and Alabama, with smaller deposits in Georgia and North Carolina. There is no doubt whatever of the ability of existing coal fields in the South to meet all possible demands for two hundred or three hundred years.

Natural gas lines are now conveying the large output of Louisiana fields into several of the states of the Southern Power Province. In addition, large deposits occur in West Virginia and Kentucky, and an increasing development is taking place in Kentucky.

Oil wells are abundant in West Virginia, Kentucky, and Mississippi. Oil is also produced in other Southern states.

In view of the facts cited, the Southern Power Province, to a greater degree than any other region in the country, is provided with abundant sources of fuel power for a very long period in the future. Cost of fuel power is therefore relatively low, and the extent of its use depends solely upon competition in price with hydroelectric power.

III. UTILIZATION OF POWER RESOURCES

Public Utility Power. In the first section of this article it was estimated that there would be needed a total additional installed capacity in public utility power plants of about 5,750,000 horse power by 1940 and 10,500,000 horse power additional in the next ten years, making a total required new installation between 1930 and 1950 of 16,250,000 horse power. Does this amount of potential power exist in the Southern Power Province, and what is the probable distribution in its development as between water power and fuel power?

Whether power shall be generated

by water or by steam is chiefly a question as to which source can produce power most cheaply. At present, as partially indicated by Table IV, about sixty per cent of the installed capacity is in steam plants. This by no means indicates that an equivalent proportion of power is generated by steam, as many large steam plants are held in reserve for use chiefly when water is deficient. During the period 1924-1929 inclusive, including the very dry years of 1925 and 1926 and the wet years of 1928 and 1929, output by water power has averaged fifty-two per cent of the total. This has varied

TABLE IV—DATA ON POWER COMPANIES OF SOUTHERN POWER PROVINCE, JUNE, 1930

Company	State	Water Power		Steam Power		Per Cent Hydro of Total Capacity H. P.	Water Power Under Cons't H. P.
		Present Installed Capacity H. P.	Ultimate Capacity Present Plants H. P.	Present Installed Capacity H. P.	Ultimate Capacity Present Plants H. P.		
Alabama Power Company...	Alabama	583,000	773,000	209,910	449,910	73.6	.....
App. Elec. Power Co.	Va. & W. Va.	44,400	44,400	425,000	425,000	9.47	.....
Broad River Power Co.*...	S. Carolina	34,118	34,118	104,557	104,557	24.6	174,262†
Car. Power & Light Co.	N. C. & S. C.	131,750	161,000	82,700	62,700	67.8	145,000
Duke Power Company	N. C. & S. C.	771,390	771,390	390,000	840,000	66.4	.....
East Tenn. Lt. & Power Co..	Tennessee	22,000	22,000	11,400	11,400	65.9	.....
Florida Power Corp.	Florida	20,000	20,000	65,000	95,000	23.5	.....
Florida Power & Lt. Co.	Florida	.....	.....	181,225‡	181,225	.....	.....
Georgia Power Company ††.	Georgia	476,630	521,630	114,236	114,236	80.8	60,000
Kentucky Utilities Co.	Kentucky	32,800	32,800	81,500	101,500	28.7	.....
Tennessee Electric Po. Co...	Tennessee	144,812	144,812	150,000	150,000	49.1	20,000
Va. Elec. & Power Co.	N. C. & Va.	35,660	38,330	176,300	316,000	16.8	.....
Sub-Total.		2,296,558	2,563,478	1,971,828	2,851,528	53.8	399,262
Knoxville Power Co.**	Tennessee	112,000	168,000	.....	.....	—100	.....
Tallassee Power Co.**	N. C.	343,000	343,000	.....	.....	—100	.....
U. S. (Muscle Shoals)		260,000	600,000	80,000	80,000	—76.5	.....
Grand Total.		3,011,558	3,674,478	2,051,828	2,931,528	59.5	399,262

* Includes Lexington Water Power Company and other South Carolina properties.

† Ultimate Capacity 300,000 H. P.

‡ Includes 16,400 H. P. Diesel plants.

** Subsidiary of Aluminum Company of America.

†† Includes Columbus Electric and Power Company.

from a minimum of 37.8 per cent in 1925 to a maximum of sixty-two per cent in both 1928 and 1929.

Proportion of output by steam for the region as a whole is unduly influenced by the very large steam production in West Virginia, as indicated on Figure 1. There is a marked tendency toward increased use of water power in that state. On the other hand, four states each generated over ninety per cent of their total output in 1929 by water power. Even in a dry year these states will produce more power by water than by fuels.

RELATIVE COSTS OF WATER AND STEAM PRODUCTION

A good deal of publicity has been given in the past three years to relative costs of power production by water and by steam. It has been asserted that as the better and cheaper water-power

sites have been developed, new water-power developments will increase in cost on account of necessity for longer transmission lines to load centers and higher land costs. This is accentuated by the fact that the mechanical efficiency of hydroelectric machinery is already over ninety per cent, and very little reduction in hydro power cost is possible through improved machinery.

On the other hand, steam-power plants may be located near load centers, thus reducing transmission costs. The cost per horse power installed at a modern steam station is nearly always less than that at an equivalent hydro station. High operating costs of fuel plants have in the past been largely responsible for cheaper power from hydro stations. But in recent years great mechanical improvements have been made both in the mechanical efficiency of the machinery and in

devices for reducing labor costs. The result has been a marked decrease in cost of fuel power. Even now, only some twenty per cent of the energy in coal is turned into useful work, as compared to a utilization of some ninety per cent of the energy in falling water. Therefore, it is felt by some that as future improvements are made in steam generating plants, the price of fuel power will be decreased to a point where it will greatly retard water-power development. Costs of power at modern hydro stations vary in general today from five to eight mills per kilowatt hour. Costs at modern steam stations will vary from eight to twelve mills per kilowatt hour. There is no great spread now as between cost of delivered power from new and remote hydro stations and new and well-situated steam stations.

However, it is believed that this does not apply to the Southern Power Province, except in certain localities. Very careful cost analyses have shown that primary power may be produced from the projected new plants in the Tennessee Basins at an average cost of $4\frac{1}{2}$ mills per kilowatt hour, at the switchboards of the power plants. It is hardly likely that steam power can compete with this, even if cost estimates are somewhat low.

STEAM AUXILIARIES NECESSARY

However, in the future as in the past, steam auxiliary will always be required to carry a part of the load during periods of deficient stream flow. There seems no reason to believe that in the Southern Power Province as a whole, the amount of fuel power installation is likely to be much less than fifty per cent of the total installed capacity in public utility plants. On this assumption, there would be required a total new installation of about 8,000,000 horse power in hydroelectric

plants by 1950. Table III shows that this capacity is easily attainable at sites where development will be economically justified. The total estimated undeveloped water power for the region as a whole, 16,134,510 horse power, is well distributed over the region and is within practicable transmission distance of all parts of it. Consequently we may say with some confidence that water-power reserves of the Southern Power Province are ample to meet all requirements for the next thirty or forty years at least.

There is no question as to the ability of existing coal, oil, and gas fields of the region to furnish fuel needed for an indefinite period in the future. Fortunately, many of these are located near ample supplies of condensing water, and hence production of fuel power in the region will be relatively cheap.

The combination of the items relating to water and fuel power resources noted above should make it possible to produce cheaper power in almost unlimited quantities in the Southern Power Province than in any other part of the United States with the possible exception of regions within transmission distance of Niagara Falls and the St. Lawrence River. Particularly may we expect to see a great industrial region grow up within or near to the very cheap power sources in the Tennessee River Basin, and at some point near tidewater where coal may be obtained by water transportation.

Individual and By-Product Power. Thirty years ago the majority of manufacturing plants of the South had their own individual power plants. As new plants were built or extensions made to old plants, it became desirable in many instances to purchase all additional power requirements from the public utility companies. Various factors entered into this, and it is not feasible to

discuss them here. The result was that the public utility companies sold by far the larger part of their rapidly increasing load during the past ten or fifteen years to industrial customers for power use. It will be noted on Figure 3 that the primary horse power installed in power-producing plants of industry has tended to decrease slightly during the past ten years. This tendency will probably continue except for two special classes of industry.

Scattered throughout the South are numerous relatively small manufacturing plants, located on small streams and having developed for their own uses from 200 to 10,000 horse power. This class of industry is rapidly finding it advantageous to redevelop its old water-power sites (which have had the cost largely amortized) by installing modern hydroelectric machinery, and to effect an interconnection with the public utilities for an exchange of energy under mutually satisfactory conditions.⁸

Also, an increasing number of quite large specialized industries, which utilize considerable steam in their proc-

esses, are being developed in the South. Such industries are those of bleaching and dyeing of textiles, pulp and paper, rubber, sugar and oil refining, soap, and many of the chemical industries. Frequently in such industries it is very economical to generate steam at fairly high pressures, use it through one or more steam turbines for power production, and deliver the exhaust steam to the process work.⁹ Large power plants having installed capacities of from 10,000 to 20,000 horse power are becoming increasingly frequent as parts of new large industries in the South. Cost of power, when produced in this way as a by-product of process steam, will often run as low as five to eight mills per kilowatt hour. Competing public utility power will usually cost over one cent per kilowatt hour. There will be a tendency to continue this practice as new industries are developed in the South, but it will not markedly affect the growth in output of public utility plants, especially if there is extension of the present tendency toward coöperation between these plants and the public utility.

IV. POWER COMPANIES OF THE SOUTHERN POWER PROVINCE

By far the greater proportion of the power needs of the Southern Power Province is now, and will continue to be, supplied from public utility sources, whether privately or governmentally owned and operated. In Table V is shown the 1929 output of the twenty-one principal public utility companies of the region, with the proportion of the total output controlled by each.¹⁰

⁸ For a discussion of these subjects see chapter on "Power Sources as a Problem in Industrial Management," prepared by the writer for *Management Problems*, issued by the University of North Carolina Press.

¹⁰ Data from *Electrical World*, May 3, 1930.

It will be observed that these companies, including the United States Government Plant at Muscle Shoals, generated eighty-four per cent of the total energy requirements, the remainder being generated by small companies and municipalities. If the several larger subsidiaries of the Commonwealth and Southern Corporation be grouped together, they had an output of over thirty-three per cent of the total. This group and the Duke Power Company produced over forty-eight per cent of the total. The Electric Bond and Share group dis-

⁹ *Op. cit.*

TABLE V—TOTAL OUTPUT IN KILOWATT HOURS OF PRINCIPAL PUBLIC UTILITY COMPANIES IN 1929 IN SOUTHERN POWER PROVINCE

Company	Rank in South	Rank in U. S.	Total Out- put in Thousands of Kw. Hrs.	Per Cent of Total Output	Generated Kw. Hrs.	Purchased Kw. Hrs.	Per Cent Purchased
Duke Power Company.....	1	9	1,981,240	15.3	1,795,043	186,197	9.40
Alabama Power Company*.	2	12	1,715,250	13.2	1,456,342	258,908	15.09
App. Elec. Power Co.....	3	18	1,484,761	11.5	1,379,269	105,492	7.10
Georgia Power Company*.	4	25	1,146,517	8.8	762,500	384,017	33.49
Tenn. Elec. Power Co.*....	5	32	819,724	6.3	751,259	68,465	8.35
Va. Elec. & Power Co.....	6	49	480,970	3.7	462,923	16,047	3.36
Car. Power & Light Co....	7	50	476,878	3.7	418,548	58,330	12.23
Columbus Elec. & P. Co*..	8	63	370,871	2.7	370,722	149	.04
Louisville Gas & Elec. Co..	9	71	328,599	2.5	311,129	17,470	5.32
Birmingham Elec. Co.....	10	79	292,759	2.3	.....	292,759	100.00
Kentucky Utilities Co.....	11	92	240,724	1.9	207,632	33,092	13.75
Kentucky & W. Va. Po. Co..	12	99	211,440	1.6	41,442	170,002	80.40
Florida Power & Lt. Co....	13	101	202,110	1.6	202,110	.....	.....
Memphis Power & Lt. Co..	14	109	182,112	1.4	180,208	1,904	.....
U. S. Govt. Muscle Shoals..	15	114	171,682	1.3	171,682	.....	.....
Tampa Electric Company..	16	115	170,887	1.3	156,365	14,522	8.50
Broad River Power Co....	17	118	162,130	1.2	143,206	18,924	11.67
S. C. Power Company*....	18	124	136,213	1.1	135,696	517	.38
Mississippi Power Co.*....	19	131	116,746	.9	24,342	92,404	70.15
Knoxville Power & Lt. Co..	20	134	111,870	.9	.....	111,870	100.00
Miss. Power & Light Co...	21	136	103,749	.8	2,816	100,933	97.29
Sub-Total.....			10,907,232	84.0	8,973,234	1,932,002	
Smaller Companies, etc....			2,068,673	16.0			
Grand Total.....			12,975,905	100.0			
Per Cent by Larger Com- panies.....			84.03				

* Subsidiary of Commonwealth and Southern Corporation.

tributed about twenty-three per cent of the total output. These three groups were responsible for over seventy-one per cent of the total output of the region.

Consolidations of Power Properties. During the past six years there has been a great amalgamation of power companies through purchases and mergers. The extent of this is shown in Table VI. The number of consolidations of private properties is misleading, in that several have changed ownership more than once. The reduction in the number of municipally owned plants is striking. This pronounced tendency toward consolidation of power proper-

ties is similar to that which has taken place generally over the country, and as the causes and effects have been fully presented elsewhere, no discussion of it is attempted here. There is nothing in it which is peculiar to the Southern Power Province, except that the movement has gone on in general with less regulation or scrutiny by public agencies than in many other parts of the country. The present supervisory control or management of companies having over eighty-four per cent of the total output of the region is divided among seven of the great holding and management corporations as shown in Table VII.

TABLE VI—CONSOLIDATIONS AND PURCHASES
OF ELECTRIC PROPERTIES, 1924-1929
INCLUSIVE

State	Public Utility or Private Properties	Municipal Properties	Total
Alabama.....	23	8	31
Florida.....	34	24	58
Georgia.....	79	53	132
Kentucky.....	41	16	57
Mississippi....	25	11	36
North Carolina	63	38	101
South Carolina.	37	15	52
Tennessee.....	51	13	64
Virginia.....	57	8	65
West Virginia..	39	..	39
	449	186	635

Interconnection of Power Plants. All of the power companies listed in Table VII have their generating plants tied into the great interconnected network of high-tension transmission lines of the Southern Power Province. This network represents a more complete integration of power-producing and transmission capacity than exists anywhere else in the world. Theoretically it is possible for power to be interchanged between any of the companies listed in Table VII. Interchange of electric energy within and across state borders is a common and desirable occurrence. The extent of such interchanges is illustrated by the amount of purchased energy shown in Table V.

Transfer and purchase of energy goes on both ways; that is, a company may sell energy one month to another company from whom it will purchase energy during the next month. Such free interchange is most effective in reducing excess stand-by capacity, in utilizing variations in water power in different sections at different times as stream flow varies, and in reducing the amount of steam power required. The

interstate export of power in 1929 is shown in Table II from data collected by the National Electric Light Association. Exported power varied from a maximum of 54 per cent of that generated in West Virginia to a minimum of 1.7 per cent of that generated in Mississippi. Naturally, the movement of power is principally from the large power-producing states into those whose power resources are smaller.

The difficulties in accurately estimating the true extent of interstate power movement are great, and the best estimates liable to considerable error. Thus, Muscle Shoals produces power in Alabama. It is exported to and used in Georgia. An equal amount of power generated in Georgia is exported for use in South Carolina. The same amount generated in South Carolina is exported for final consumption in North Carolina. There have been three separate blocks of power crossing state lines; yet in effect, there is a single interstate transfer from Alabama to North Carolina. This example illustrates only one complexity of this problem, and it is impracticable to further discuss it within the limits of this article.

PRINCIPAL POWER GROUPS

Commonwealth and Southern Corporation. The Southeastern Power and Light Company was organized in 1924, but at first operated chiefly through the Alabama Power Company and subsidiaries. In January, 1926 the Georgia Railway and Power Company was merged with the Southeastern. From that time until late in 1929 the Southeastern Power and Light Company became the general holding organization for a large number of power companies. In 1929 the Southeastern was absorbed by the Commonwealth and Southern Corporation, but with no major change in

TABLE VII—PRINCIPAL POWER COMPANY MANAGEMENT GROUPS IN THE SOUTHERN POWER PROVINCE

Operating Company	State	Holding Company	Management Group	Per Cent of Total Output of Region by Companies or Groups †
Kentucky-W. Va. Power Co.. Appalachian Elec. Power Co.. Knoxville Power & Light Co.. Memphis Power & Light Co.. Carolina Power & Light Co.. Birmingham Electric Co..... Florida Power & Light Co....	Kentucky Va. & W. Va. Tennessee Tennessee N. C. & S. C. Alabama Florida	Am. Gas & Elec. Co. " " " " Nat'l Po. & Lt. Co. " " " " " " " " " " " " Am. Power & Lt. Co.	Electric Bond & Share Co. " " " " "	23.0
Alabama Power Company.... Georgia Power Company..... Columbus Elec. Power Co..... Gulf Power Company..... Miss. Power Company..... Tenn. Elec. Power Company.. S. C. Power Company.....	Alabama Georgia Georgia Florida Mississippi Tennessee S. Carolina	Commonwealth and Southern Corp.	Commonwealth & Southern Corp.* " " "	33.0
Duke Power Company.....	N. C. & S. C.	Duke Power Company	Duke Power Co.	15.3
Virginia Elec. Power Co..... Tampa Elec. Company..... Gulf States Utility Company.. Savannah Elec. & Power Co..	Va. & N. C. Florida Florida Georgia	Engineers Pub. Ser. Co. " " "	Stone & Webster " " "	5.0
Broad River Power Company.. Lexington Water Power Co.. Ky.-Tenn. Light & Power Co..	S. Carolina S. Carolina Ky. & Tenn.	Assoc. Gas & Elec. Co.	J. G. White " "	1.2‡
Louisville Gas & Electric Co..	Kentucky	Standard Gas & Elec. Co.	Byllesby Eng'g & Management Corp.	2.5
Kentucky Utility Company.. Tidewater Power Company.. Va. Public Service Co..... Georgia Power & Light Co....	Ky. & Virginia N. Carolina Virginia Georgia	Mid-West Utility Co. Seaboard Pub. Ser. Co. " "	Insull Group " " "	2.5**
Tallassee Power Company.... Knoxville Power Company...	N. Carolina Tennessee	Aluminum Company of America	Mellon Interests	7.7††

* Connection with Electric Bond and Share Company through Stock Ownership.

† Percentages refer to data in Table V. Actual percentages are generally greater, due to small companies not shown in Table V.

‡ Will be considerably increased when Saluda development is placed in operation.

** Estimated.

†† This is not a public utility company, although some of its power is sold to such companies and is included in their output.

operating methods. This company, like its predecessor, operates in the South through control of a principal power company in each state, this principal company owning and operating its properties and those of a number of subsidiaries. The principal companies are: Alabama, the Alabama Power Company; Georgia, the Georgia Power Company; Florida, the Gulf Power Company; Mississippi, the Mississippi Power Company; Tennessee, the Tennessee Electric Power Company; and South Carolina, the South Carolina Power Company.

In all, some forty principal and subsidiary companies are controlled, representing by far the majority of the power-producing and transmission facilities of the respective states, except in South Carolina. Among the subsidiaries are engineering, financing, and construction organizations, so that the Commonwealth and Southern Corporation controls and benefits from practically every element entering into the various phases of power production in the large territory over which its activities extend. Each principal company has its own officers, the majority of whom are local men, who are given wide discretion in directing the activities of the company. The Alabama Power Company, the Georgia Power Company, and the Tennessee Electric Power Company are the predominant elements in the group. Each is now, and has been for many years prior to recent consolidations, directed by men of talent and ability.

The engineering design and operation of these companies is probably the best in the South. A good deal has appeared in the technical and lay press regarding the systems of complete river development inaugurated in the South. The Georgia Power Company was a pioneer in this respect, and by design and construction based upon the

best engineering studies, began in 1912 the unique development of the Tallulah and Tugalo Rivers. This development is outlined in Figure 6, and it is there indicated that by six water-power plants, over 1,200 feet fall has been developed in 37.5 miles of river. These plants have an installed capacity of 289,400 horse power and produce nearly 419,000,000 kilowatt hours of energy in an average year. So admirably are the hydrological characteristics of the watersheds investigated by stream gauging and rainfall observations, that nearly every drop of water flowing down the stream is utilized in power production.

The Alabama Power Company has more recently constructed large developments on the Coosa and Tallapoosa Rivers, which are similarly controlled and operated by sound engineering methods.

Duke Power Company. This company is second in importance among the power groups of the Southern Power Province. It ranks first as a single operating company, both in output and in plant capacity. It produces over fifteen per cent of the total power of the region. (See Table V.) Its hydro plants on the Catawba River in North Carolina and South Carolina develop 762 feet fall out of a total of 1,056 feet available in a distance of about 216 miles, and have an installed capacity of over 695,000 horse power. This company supplies power chiefly to the industrial Piedmont area of North and South Carolina. It is the successor to the Southern Power Company and a number of related power companies which were all closely affiliated.

The Duke Power Company is unique in at least two ways. First, it is not controlled by or closely affiliated with any of the large public utility management corporations. It has always

INTENSIVE DEVELOPMENT
TALLULAH AND TUGALO RIVERS
BY
GEORGIA POWER COMPANY.

TOTAL POWER INSTALLED 289,400 H.P.
TOTAL FALL DEVELOPED 1,203 FT
TOTAL AVERAGE ANNUAL OUTPUT 418,786,000 Kw.-HRS.

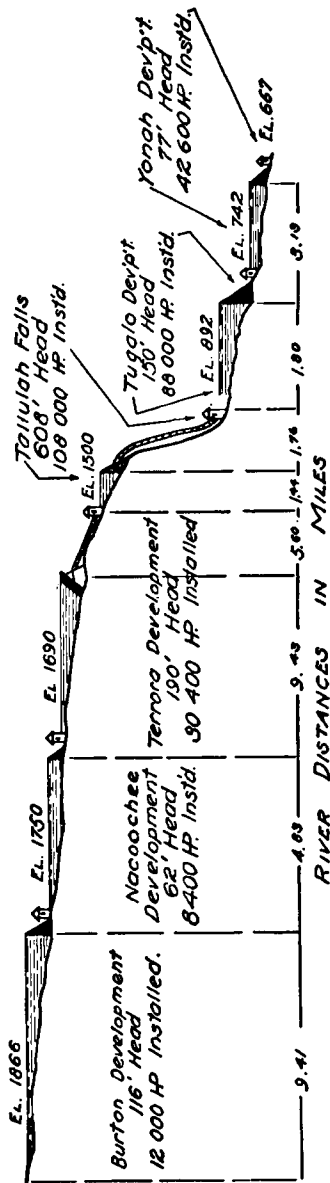


Figure 6

been highly individualistic, and even since the death of its founder, James B. Duke, it retains the impress of his personality and policies. Second, it presents extremely interesting economic, educational, and politico-social aspects in the two states in which it operates, through its connection with the Duke Endowment.

The Duke Endowment was created by the founder of the Duke Power Company, its income being derived chiefly from dividends on securities of the Duke Power Company and the Aluminum Company of America, the latter company owning the second largest group of water-power developments in North Carolina. The operations of this endowment are carried out principally through: (a) Duke University, which was created under the terms of the endowment; (b) financial assistance to a large number of hospitals in North Carolina and South Carolina; (c) annual income to several educational institutions in North and South Carolina; (d) annual grants to various orphanages in North and South Carolina; (3) allowances to superannuated preachers and their widows of the Methodist Church in North and South Carolina; (f) contributions towards the erection and maintenance of rural Methodist churches in North Carolina. For the years 1926 to 1928 inclusive, a total of \$3,374,570 was distributed by the endowment to the agencies above mentioned.¹¹

Tallassee Power Company. This Company is a subsidiary of the Aluminum Company of America. It ranks third among the power groups of the region in installed horse power and fourth in total output. Its output is almost entirely from hydroelectric plants. It sells some power to public utility companies, but uses most of its output for its own manufacturing pur-

poses. In North Carolina it has three developments on the Yadkin River, one on the Little Tennessee River, and another on the Cheoah River. The output from the last two plants, having installed capacity of 160,000 horse power, is transmitted principally into Tennessee for use in the Alcoa plant of the Aluminum Company of America.

Appalachian Electric Power Company. This company is a subsidiary of the American Gas and Electric Company, and is affiliated with the Electric Bond and Share Company. It operates principally in West Virginia and in the western part of Virginia. Its principal hydro plants are on the New River, and form only a small part of its total plant capacity, which is largely in steam plants.

Virginia Electric and Power Company. This company is a subsidiary of the Engineers Public Service Company, affiliated with Stone and Webster Service Corporation. It operates principally in southeastern Virginia and northeastern North Carolina. Its principal hydro plants are on the Roanoke River in North Carolina, but its chief source of energy is from large steam plants in Virginia. It has applied for a Federal Power Commission license to construct a new hydro plant near Roanoke Rapids, North Carolina, with an installed capacity of about 56,000 horse power.

Carolina Power and Light Company. This company was originally of relatively small proportions and furnished power to the region between Raleigh, North Carolina, and Camden, South Carolina. During the last four or five years there have been merged with it the Yadkin River Power Company, the Asheville Power and Light Company, and the Pigeon River Power Company. It has hydro plants on the Yadkin River in the east central section of North Carolina, and on the French

¹¹ Report of the Duke Endowment, 1928.

Broad and Pigeon Rivers in western North Carolina. It has just completed construction of the highest head large hydroelectric plant in Eastern United States—the Waterville development on the Pigeon River, having an installed capacity of 139,500 horse power and a gross operating head of 861 feet. This company is a subsidiary of the National Power and Light Company, affiliated with the Electric Bond and Share Company.

Small Companies. Scattered throughout the region are a considerable number of small companies, of which those affiliated with the Seaboard Public Service Company in Virginia and North Carolina form the largest group. Altogether, these companies furnish less than fifteen per cent of the total output.

Municipal Plants. Power plants owned and operated by municipalities are rapidly disappearing. Probably there is a greater concentration of such plants in eastern North Carolina than elsewhere. The larger cities and towns in this area have refused to dispose of their power plants to several power companies that have offered large sums for them. The cities feel that the profits from sale of power from these plants are greater than would be received in taxes from the power companies. Rates are about the same, and in several of these plants equipment and service are of a high order. Revenue from some plants is markedly in excess of fixed charges and operating costs, and returns a good profit to the city. Altogether, the output from these plants, largely from steam, is only 0.17 per cent of the total in the state. Power output from publicly owned plants is probably less than 2 per cent of the total output in the Southern Power Province.

There is a growing tendency for municipalities to produce power for pumping in connection with develop-

ment of impounded public water supplies. In several instances, as at Spartanburg, South Carolina, and Durham, North Carolina, the cost of power for pumping is greatly reduced by this means, as compared with the cost of power which would otherwise be purchased from the public utilities. Recently, Crisp County, Georgia, has constructed a hydroelectric plant on the Flint River having 18,000 horse power installed capacity. The county announced a reduction in electric rates in the vicinity from ten to fifteen per cent below those of the Georgia Power Company. The latter company then announced a local reduction of thirty-five per cent in rates to meet the competition. Upon this the Georgia Public Service Commission ordered the power company to make a similar reduction throughout the state. The order was restrained by the Superior Court, and the Commission is now appealing from it.

The history of the gradual development of most of the larger power companies of the Southern Power Province is largely a story of individual initiative and vision on the part of a few Southern men with ability and courage. The larger companies in many cases started with little capital, small market, and few stockholders. The difficulties overcome and the final success which has played so great a part in the industrial growth of the South have been described by the writer in a previous article.¹² The power companies have undoubtedly contributed as great a share to the industrial upbuilding of the South as has any other single agency.

STATE REGULATION OF POWER

Space is not available for an adequate presentation of conditions in the South-

¹² Loc. cit., *Manufacturers Record*, April 21, 1927.

ern Power Province in regard to one very important aspect of the power situation, namely, the status of regulation by state agencies. It will suffice to say that in no state, with the possible exception of Alabama, have state regulatory bodies been given the personnel, the funds, or the legal power to operate effectively in regulating rates, service, taxes, securities, or mergers of public utility power companies or municipal power plants. With greater power resources than any equivalent region in the country, less has been attempted than almost anywhere else with regard to effective regulation.

All states have some form of regulatory body. In general, the activities

of these state agencies have been confined largely to rate cases. Alabama has a real commission with fairly adequate technical personnel and sufficient powers. The benefits from its activities have been striking. Tennessee and West Virginia have the next most effective regulation, followed by Virginia and Georgia.

Industrial power rates in the Southern Power Province are as low as or lower than those in other states. This is due in part to the necessity under which the power companies have been to stimulate industrial development and to offer industrial power rates sufficiently low to compete with other regions.¹³ The same is not necessarily true of domestic rates.

V. SUMMARY

From the foregoing study of the power situation in the Southern Power Province, the following conclusions may be drawn:

(1) The Province is now, and will continue to be, entirely self-sufficient as to power, having no necessity to import water or fuel power from other regions.

(2) The generation and use of electric power has increased at a greater rate in the Southern Power Province during the past five years than in other parts of the country. It is estimated that increase in consumption will average about nine per cent per year until 1940, and eight per cent per year from 1940 to 1950.

(3) This will result in a total output of 63,470,000,000 kilowatt hours in 1950, requiring an estimated increase in installed capacity of public utility power plants of about 16,250,000 horse power.

(4) The topography, the geology, and the hydrography of the region are in many places marvelously adapted to economic water-power development. Greater available reserves in unde-

veloped water power exist in this area than anywhere else east of the Rocky Mountains, with the possible exception of northeastern New York. Total undeveloped water power is estimated at 16,134,510 horse power installed plant capacity.

(5) The plan proposed by the United States Engineer Corps for intensive development of the Tennessee River and its tributaries is outlined, and indicated as possible of making available nearly 8,000,000 horse power in installed capacity, together with incidental navigation and flood-control benefits.

(6) The situation with regard to Muscle Shoals (present installed capacity of 260,000 horse power) is dis-

¹³ Mr. Preston S. Arkwright, President of the Georgia Power Company, and one of the ablest and most clear-sighted power-company executives of the South, pointed out in a recent address that while the average industrial power rate for 68 typical cities scattered over the United States was 1.544 cents per kilowatt hour, the average industrial power rate for the South was 1.359 cents per kilowatt hour.

cussed, indicating that this plant is producing only about twenty per cent of its potential output, that it might be developed to an almost immediate capacity of 450,000 horse power and eventually warrant the complete installation of 610,000 horse power, if Congress would adopt a reasonable policy for long-term lease of the power plant or long-term contract for sale of power, and if Congress would remove the existing hindrances to development of power projects on the upper Tennessee and Clinch Rivers, including those mitigating against construction of Cove Creek reservoir.

(7) Fuel reserves of the region are shown to be ample for several hundred years.

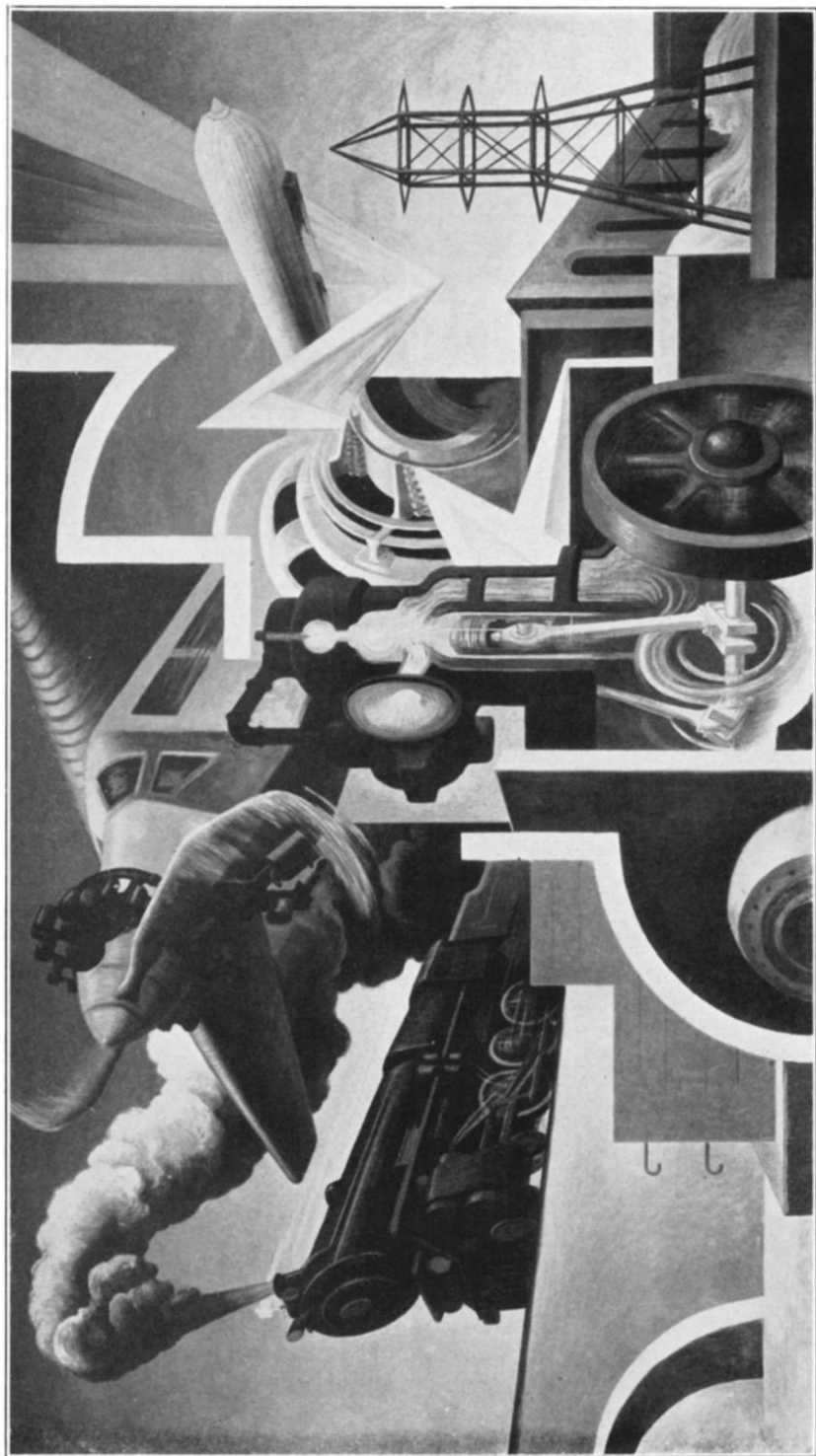
(8) The power system and principal companies of the region are discussed. Certain relationships of these companies to each other and to the public are pointed out. It is shown that eighty-four per cent of the total output is controlled by seven major power groups.

(9) The regulation of power companies and power service is touched upon. Considerable improvement in the wise and fair administration of state regulatory policies is advocated if

entry of the Federal Government into this field is to be avoided. Industrial power rates are shown to be lower, on the average, than in most other sections of the country.

CONCLUSION

As a result of the analysis of the power situation in the Southern Power Province which has been presented in the preceding pages, it should be evident that this region is singularly fortunate in having a combination of great undeveloped resources in both water power and fuels which is unique in the United States, and which is such as to insure supply of reliable and cheap power limited only by the extent of the demand for it. Facilities for its generation and transmission are unexcelled, and linked up to it is a scheme for extending the present coastal, Mississippi, and Ohio navigable waterways far into the interior of the region. The combination of ample and cheap power, low freight costs on navigable waterways, and reduced flood damages as a corollary of the two preceding developments, will continue and possibly accelerate the industrial growth of the Southern Power Province.



POWER

One of a number of murals painted by Mr. Thomas H. Benton for the New School of Social Research in New York. Reproduced by permission of Dr. Alvin Johnson, Director

Industrial Development in Virginia

By ROBERT H. TUCKER, LL.D.

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IN Virginia, as in the rest of the Southern states, industrialization has become an absorbing subject. It is widely heralded and discussed, and frequently exaggerated or misunderstood. Virginia is predominantly an agricultural state and will probably so continue for many years to come. Yet it is true that Virginia is being industrialized at a rapid rate. Industrial and commercial growth has been marked since the opening of the present century and has reached unusual proportions in recent years.

The census reports of manufactures show that in the four-year period from 1923 to 1927, the annual value of manufactured products in Virginia increased by twenty-two per cent, while external evidences indicate that this rate of increase was sustained, if not exceeded, in the years 1928 and 1929.¹ Related activities, such as rail shipments, the production of electric power, and tonnage handled through the Hampton Roads ports, have shown a corresponding growth. Substantial additions have been made to the wealth of the state. These changes have brought new social and industrial problems, accompanied by a new spirit and outlook and an awakening in civic affairs. Forces now at work are destined in time profoundly to modify the cultural life of the state.

¹The census statistics of manufactures for 1929 are not available for inclusion in this article. Local statistics extend through the year 1928, but they are not on a comparable basis and are otherwise unsuited to the present purpose.

In some respects the present industrial activity of Virginia may be regarded not as a new and unexpected departure, but rather as the resumption of a movement long postponed on account of various disturbing influences. Virginia was never so completely committed to the plantation system as were the cotton-growing states of the South. The industrial motive has been strong since colonial times, though with the introduction of slavery, agriculture became more profitable than manufactures. In 1810, Virginia ranked fourth among the states in the value of manufactured products, and though its contribution steadily declined in relative importance from that time to 1870, it ranked ninth as late as 1860.

GROWTH OF MANUFACTURES

The present development, therefore, dates from the year 1870, when Virginia began to recover from the disastrous effects of the Civil War. Progress, which was steady in the decades following 1870, is now becoming pronounced. Value added by manufacture in Virginia advanced from \$65,206,000 in 1904 to \$325,181,000 in 1927—a fivefold increase in twenty-three years. During the same period the total value of manufactured products rose from \$148,857,000 to \$671,346,000, an increase of 350 per cent. While part of this increase must be attributed to the higher level of commodity prices prevailing in 1927, a

large part of the increased value represents a real expansion in the manufactured output of the state.²

These percentage increases, however, lose much of their significance when considered in connection with the very low levels at which Virginia began. More to the point are the developments since 1914. Table I shows the value of manufactured products in typical years for Virginia, for eleven Southern states,³ and for the United States. Table II shows the percentage increases for significant periods, omitting the abnormal period of the World War.

rapid than that of the United States and more rapid than that of any of the Southern states except Texas. The striking part of this advance, however, came between the years 1925 and 1927, when the value of Virginia's manufactured output increased 13.9 per cent, while that of the United States increased by only a fraction of one per cent and many of the individual states suffered declines. In this two-year period, Virginia advanced in rank from twenty-fourth in the nation and sixth among the Southern states to twentieth in the nation and third among the Southern states.

TABLE I—VALUE OF MANUFACTURED PRODUCTS⁴
In Millions

Section	1914	1923	1925	1927
Virginia.....	264	548	589	671
Southern States.....	2,197	5,703	6,421	6,401
United States.....	23,974	60,529	62,668	62,718

TABLE II—VALUE OF MANUFACTURED PRODUCTS—PERCENTAGE INCREASE

Section	1914-1923 Per Cent	1914-1925 Per Cent	1914-1927 Per Cent	1923-1925 Per Cent	1923-1927 Per Cent	1925-1927 Per Cent
Virginia.....	107.57	123.1	154.16	7.48	22.44	13.92
Southern States.....	159.28	192.27	191.78	12.41	12.23	-0.32
United States.....	151.35	161.39	161.6	3.53	3.61	0.07

From 1914 to 1923 Virginia's industrial development was not so rapid as that of the United States or of the Southern states as a whole. From 1923 to 1927 the development was more

² Values for this period must be considered in connection with the general level of commodity prices. The wholesale price index numbers of the U. S. Department of Labor (1913 average=100) are as follows: 1904=85.6; 1914=98.1; 1923=153.7; 1925=158.7; 1927=146.8.

³ The states forming the Southern Confederacy in 1861—Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

The year 1927 marked a general recession in industry throughout the United States. Most industries in Virginia followed the general decline. Virginia's exceptional position in 1927 was due to a continued advance in such manufactures as tobacco, furniture, paper and pulp, rayon, knit goods, leather, and silk. The period considered is too brief for definitive judgment, but the conditions point to the begin-

⁴ Sources: Statistical Abstract of the United States; census reports on manufactures 1914, 1923, 1925, 1927.

ning of an unusual industrial development distinct from the development of the country as a whole.

MAGNITUDE AND VARIETY OF ESTABLISHMENTS

More impressive, however, than the general statistics, and in some ways more clearly indicative of the industrial transformation now in progress in Virginia, are the number, the size, and the character of the industrial enterprises that have entered the state since 1925. Prominent among these are an atmospheric nitrogen plant with an initial capital investment estimated at \$35,000,000 and plans said to involve the expenditure of \$125,000,000 more, and three rayon plants with investments ranging from \$6,000,000 to \$10,000,000 each. Other establishments, with capital investments ranging from \$1,000,000 to \$4,000,000 each, include a plant for the manufacture of boats and airplanes, an oil refining plant, a liner board plant, two plants for the manufacture of cellophane, a furniture manufacturing plant, three woolen mills, and an automobile assembling plant.

The list is typical and in no sense exhaustive. It is intended only to afford some idea of the magnitude and the variety of the new industries now finding location in the state. To this list might be added scores of establishments with investments ranging from \$500,000 to \$1,000,000, as well as extensive additions, costing from \$500,000 to \$7,000,000, to existing plants engaged in the manufacture of rayon, tobacco, chemicals, paper and pulp, furniture, foods, and electrical supplies. Such names as the Allied Chemical and Dye Company, the Ford Motor Company, the Du Pont companies, the Industrial Rayon Company, and the Viscose Corporation, attest the character of these new enterprises.

DEVELOPMENT OF PARTICULAR INDUSTRIES

Virginia's industrial growth has been dependent partly upon the expansion of old industries, such as tobacco, lumber, cotton textiles, fertilizer, and car construction and repairs, and partly upon the introduction of new industries.

Of the more recent developments, those in the so-called cellulose products (rayon, wood pulp, and paper), in chemicals, and in furniture have been outstanding, while marked progress has been made in the manufacture of silk, dyestuffs, knit goods, steel tools and dies, and motor vehicle parts. Virginia now produces nearly a third of all the rayon manufactured in the United States. In the manufacture of paper, Virginia has already taken the leading place among the Southern states and is developing twice as fast as the country as a whole. There are 142 industries in Virginia concerned with the manufacture of chemicals and allied products. Seventeen of these are engaged exclusively in the manufacture of chemicals, including sulphuric acid, nitrogen compounds, sodium compounds, and miscellaneous products. In the furniture industry the value of output increased fourfold between 1921 and 1927, and while this industry has suffered severely in the current business depression, the foundation of a furniture manufacturing center of considerable proportions has been laid in the southwestern Piedmont section of the state.

Perhaps the most impressive feature of Virginia's industrial development is the variety of manufactures represented. Of the ten leading industries in Virginia, the tobacco industry contributed, in 1927, 21 per cent. of the value of manufactured products, while the rest contributed percentages rang-

ing from 5.7 to 2.1. Fifty-seven industries produced in the same year goods valued at more than \$1,000,000 each. However, the situation is somewhat obscured by the classifications. Combined with their allied industries, the tobacco group, the chemical group, and the iron and steel group have an annual output in excess of \$100,000,000 each.

LOCATION OF INDUSTRIES

Raw materials, fuel and power, climate, and labor supply have been important factors in the location of industries in Virginia, but transportation—water and rail—is probably the foremost factor in the location of the extensive industries that have recently entered the state.

Taken as a whole, the industries of the state are unevenly distributed. In 1927, twenty-five of the state's one hundred counties had advanced to the point where, in value of products, manufacturing industries occupied first place. Half the manufactured output of Virginia, however, is produced in five counties—Henrico, Norfolk, Roanoke, Campbell, and Pittsylvania; and approximately eighty per cent is produced in the limited areas identified with Hampton Roads, the lower James River Basin, the southern Piedmont, and the southwestern part of the Valley of Virginia.

The Hampton Roads area includes the cities of Norfolk, Portsmouth, Suffolk, and Newport News, and is the seat of large enterprises engaged in shipbuilding, car construction and repairs, peanut processing, and the manufacture of fertilizer, farm implements, and lumber products. The lower James River Basin, comprising the cities of Richmond, Petersburg, and Hopewell, contributes approximately forty per cent of the manufactured output of the state, its principal manu-

factures being tobacco, wood products, textiles, iron and steel products, trunks and bags, chemicals, and car construction and repairs. The southern Piedmont section includes the cities of Lynchburg and Danville and the towns of Martinsville, Bassett, and Rocky Mount, and the chief manufactures are textiles, furniture, lumber, iron products, flour, and boots and shoes. The southwest comprises a narrow strip of territory extending from Roanoke to Bristol at the extreme southwestern end of the Valley of Virginia. Iron and steel, building materials, lumber, textiles (including rayon), and flour, are among its principal products.

This localization of industries, however, does not create the usual problem of congestion. The areas are large, and many of the newer industrial plants are located in spacious suburban sections. Secondary manufacturing centers are also developing rapidly. This is particularly true in the manufacture of rayon and paper and pulp at Covington in the western part of the state; of rayon and other textiles at Waynesboro, Charlottesville, and Staunton in the central part of the state; and of concrete, textiles, and flour at Alexandria and Winchester in the northern part of the state. With a view to utilizing the local labor supply, industries of lesser magnitude are being widely distributed in the smaller towns throughout the state.

BASES OF INDUSTRIALIZATION

In comparison with figures showing the annual manufactured output of the older industrial states, the figures for Virginia are small. Virginia has made rapid advancement over the low levels of a generation ago, but it has really just begun its industrial progress. It is improbable that Virginia will ever reach the degree of industrialization attained by the great manufacturing

states of the Northeast. There is every reason, however, to expect that it will in time reach the stage represented by such states as Wisconsin and Ohio. The present development rests for the most part upon a solid foundation. The fundamental factors are favorable.

Virginia is well provided with raw materials and has easy access to the almost unlimited stores in neighboring states. The state as a whole is well supplied with transportation facilities. Eight continental railway lines reach into the heart of the North, the South, and the West, while from the Hampton Roads ports steamship lines reach most of the important ports of the world. In its location between the industrial North and the agricultural South, Virginia is near the great national markets. The labor supply is abundant, with a large reserve on the farms. Power is cheap. Climate is a distinct asset. Summers are neither long nor severe. Winters are mild and snowfall is light, thus reducing the cost of living and limiting the interruption of transportation to a minimum.

PHYSICAL CONDITIONS

Few states possess a greater variety of soil, climate, and natural resources than does Virginia. The area of the state comprises 40,262 square miles of land and 2,365 square miles of water. The land area stretches back 450 miles from the seacoast and includes all altitudes from sea level to 5,700 feet.

Virginia is composed of five distinct physiographic regions, each of which traverses the state in a general northeast and southwest direction: the Coastal Plain, extending from 75 to 100 miles to the "fall line," its sandy clay soil being especially adapted to truck farming; the Piedmont Plateau, stretching from the "fall line" to the foothills of the Blue Ridge and gradu-

ally widening from 25 miles to the north to 120 miles on the southern boundary of the state, adapted to general agriculture and the occurrence of secondary minerals; the Blue Ridge, a narrow mountain barrier, significant only for orchards on the more favorable slopes and as a possible source of timber and minerals; the Great Valley, an undulating limestone trough, 15 to 40 miles in width and 250 miles in length, well adapted to agriculture and stock-raising; and the Appalachian Plateau, a rugged, irregular belt characterized by high altitudes and extensive forests and coal-bearing areas.

These regions are traversed by a network of rivers and smaller streams finding outlet in the Chesapeake Bay and the Atlantic Ocean to the east and the south and in the Ohio and Mississippi systems to the north and the west. The contour in the different sections gives the rivers a relatively steep fall, thus insuring ample water power.

Cutting across all these regions and reaching from the extreme west central part of the state to the Chesapeake Bay is the great basin formed by the James River and its tributaries, a section combining all the factors needed for the development of manufactures on a large scale.

Virginia's basic mineral resources, such as coal, iron ore, limestone, clay, and building stone, including marble and granite, are sufficient to meet all reasonable needs of the future. Coal, iron ore, and limestone lie in close proximity. Thirty-two minerals are now being mined commercially in the state, including, in addition to the foregoing, manganese, soapstone, the titanium minerals, feldspar, salt, and gypsum. While Virginia ranks twentieth in the United States in the value of mineral products, it ranks second in the production of pyrite and third in the production of manganese

ore. An extensive mining development now under way is expected to place the state in a leading position in the production of the titanium minerals.

Forests cover nearly half the land area of Virginia. The Coastal Plain and the Piedmont Plateau are dominated by pines, poplars, and gums, which grow rapidly and afford a continuous supply of material for pulp and paper mills. In the upper Piedmont, the Valley, and the West, numerous species of hardwoods abound.

These resources are supplemented by rich and varied farming areas. It has been said that in its soil and geographic location, Virginia is in reality a composite of Eastern America.

POPULATION AND LABOR

The population of Virginia in 1930, as announced by the Census Bureau, is 2,421,851. Negroes compose approximately one fourth of this number. The white population of Virginia is homogeneous, the foreign strain being unusually small. There is little immigration. The movement of population has been characterized in recent years by an exodus of Negroes from some sections of the state and by an unusual drift of population from the distinctly rural counties to the cities or to counties where industrialization has made substantial progress. This trend has been particularly striking in the past decade, when fifty-eight of the counties of the state showed losses in population amounting in a few cases to more than twenty per cent⁵ and in numerous cases to more than ten per cent. On the other hand, the cities and the more highly industrialized counties made substantial gains.

Virginia possesses an abundant sup-

ply of labor of an unusually satisfactory type—homogeneous, intelligent, alert, and not easily moved by propaganda. Women make up a relatively small proportion of the working force, but they are now entering industry in increasing numbers. Labor replacement is not yet a serious problem in Virginia, for despite the movement to the industrial centers, there is still a large labor reserve on the farms.

With respect to wages and working hours, Virginia occupies an intermediate position between the North and the West on the one hand and the extreme South on the other. Wages in Virginia are from twenty-five to thirty per cent below the national average. Much of this difference is due to a lower standard of living and should not be expected to continue. A considerable portion of the difference, however, is attributable to lower cost of living, and may be regarded as a permanent favorable differential.

Most of the skilled trades in Virginia are organized, but operations are usually on an "open shop" basis. Relations between employer and employee have, so far, been reasonably free from antagonism, and Virginia has been able to avoid the evils of industrial strife. This has been due in no small part to the character of employer and employee. Both, on the whole, are sane, conservative, and dependable.

Conditions in Virginia are not perfect. There are evidences here and there of paternalism and the traditional proprietary attitude on the part of employers and of restlessness and discontent on the part of the workers. These, however, are exceptions rather than the rule. Virginia is facing today the same industrial problems that were faced by the North and the West a generation ago. Organized labor and collective bargaining are inevitable in the South, just as they have ultimately

⁵ These larger losses in population, as shown by the recent census figures, are more apparent than real, since they have arisen for the most part from local annexations.

proved to be in all the highly industrialized sections of the world. Whether the race can learn by experience, no one can venture to say; but there is still much in the labor situation in Virginia to encourage the hope that the employers and employees of the state may be able to avoid the mistakes and the unnecessary conflicts of the preceding generation and build upon the clear experience of the past.

SOCIAL AND POLITICAL CHANGES

Industrialization in Virginia has not progressed so far as to overshadow agriculture, but it is no exaggeration to say that it has progressed far enough for its effects to become discernible in the institutional life of the state. These effects are evidenced in the gradual modification of social and political ideals, in the decline of sectionalism, and in the rise of a new spirit in civic and social affairs. Concretely, they are traceable in the movement for governmental reform, in the extension of industrial legislation, and in the gradual emergence of a type of culture that promises to differ widely from the traditional culture of the past.

GOVERNMENT AND TAXATION

The movement for governmental reorganization in Virginia antedates by many years the recent marked industrial expansion, but it is significant that this movement should have culminated in the years from 1926 to 1928. Since 1926 Virginia has completely revised its Constitution and has adopted a volume of constructive legislation unequalled in any similar period in recent generations. This legislation includes a comprehensive program designed to reorganize the state government, to reconstruct the state tax system, and to promote the industrial development of the state.

The most far-reaching changes have

been made in the field of state finance. The financial administration has been reorganized and the tax system readjusted with a view to making the state more inviting to industry and capital from the outside. Some taxes have been abolished and others greatly reduced, while increasing emphasis has been placed upon income as a measure of tax-paying ability. Growing demands for the construction and the maintenance of roads have been met through increased taxes on motor vehicles and motor vehicle fuels. Virginia has thus been able, without recourse to bonded indebtedness, to construct a state highway system that now represents an investment of more than \$90,000,000.

These improvements, combined with the growth of taxable values in the past five years, have enabled the state to increase appropriations for roads, for schools, and for other public purposes, and to convert a deficit of \$1,309,000 on March 1, 1926, into a surplus of \$4,721,000 on March 1, 1930.

OTHER LAWS AFFECTING INDUSTRY

Some progress has been made in the adoption and the enforcement of industrial legislation, though Virginia's industrial code still leaves much to be desired.

A water-power act has recently been adopted with provisions designed to encourage the development of water power in the state, and the banking laws have been thoroughly revised and codified. Amendments to the Workmen's Compensation Act have reduced the waiting period and raised the benefits to the injured worker, but the provisions of this act are still considerably below the average of the country as a whole. Laws respecting safety and sanitation have been improved but are not yet adequate for the development of an effective safety code.

Earlier legislation limits the work of women in industry to ten hours a day, but there are no minimum wage laws and no safeguards except popular sentiment against night work for women. A children's code, however, adopted in 1922, places Virginia in an advanced position with respect to this type of legislation, and inspection and the general administration of labor laws are reasonably thorough.

PROGRESS IN EDUCATION

In its provision for public education Virginia has long occupied a low rank in comparison with her sister states. The primary cause of this has been poverty, but signs of improvement are now visible on all sides. These are found not in a radical departure from traditional ideals, but in a gradual shifting of content and emphasis.

A careful survey of the state's educational system has recently been made by a staff of experts under an Educational Commission, many of whose recommendations are now being put into effect. Courses in trade and industrial education, conducted in the schools and in coöperation with various industries, are rapidly increasing in number. The higher institutions are also making substantial progress in the establishment of courses bearing more directly upon industry. Emphasis is still upon the cultural and disciplinary subjects, but the trend in the direction of technical and scientific training is unmistakable.

But the most profound effect of the recent industrial growth in Virginia has come, and will continue to come in the future, through the increased tax revenues available for educational purposes. Since 1920 state funds available for secondary education have doubled, and state appropriations to the higher educational institutions have increased at a more rapid rate.

For the first time since the Civil War, Virginia is in a position adequately to finance its schools and colleges. Virginia, like the other Southern states, is now definitely committed to a system of state-supported colleges and universities such as the West has been developing for a generation or more. State revenues are growing, state appropriations are increasing, and great state educational institutions, with ample resources at their disposal, are now in the making.

INDUSTRIALIZATION AND SOUTHERN CULTURE

Virginia is thus passing through an economic, political, and social awakening that can hardly fail to be revolutionary in its effects. Already the fear is being widely expressed that the machine technique and the machine spirit will undermine intellectual and cultural ideals that have been centuries in the making. Perhaps there is some ground for this fear. Here and there one may observe evidence of the changes and the conflicts that invariably accompany the mechanization of industry and the congregation of population in larger centers. On the whole, however, this fear is groundless. Changes there must be, with the consequent evils of transition, but the ultimate results will undoubtedly be good.

Machine industry implies no reduction in standards or inferiority in intellectual attainment. To the mountaineer, to the tenant or the farmer sunk in poverty, the factory and the town bring a distinct advance over the old conditions. Of the business man, the ability demanded to supervise and control a great corporation is no less than that required to manage a large plantation. Many think it very much greater. Increased wealth, which must flow from industrialization, will mean better homes, new and better schools, more

leisure and opportunity for development. Upon this foundation the South will build a higher and more enduring culture than it has ever known in the past.

CONCLUSION

Industrial development in Virginia is thus impressive and may be expected to continue on a more extensive scale. Virginia is still industrially immature, but the basic factors are favorable and a satisfactory beginning has been made. That the James River Basin will eventually become the seat of industrial establishments on a large scale seems now assured. That the Piedmont and mountain sections of the state will provide location for a great variety of manufactures seems equally certain.

Industrialization, with the proper balance between agriculture and manufactures, undoubtedly is the key to Virginia's future prosperity and its future position in the nation.

In the meantime the real problem in Virginia, as in the rest of the South, is to secure the benefits of industrialization while eliminating or minimizing its evils. Virginia is eager for industrial development but it wants to secure it without exploiting its labor or its natural resources and without sacrificing the essential elements of its individuality, its culture, or its high ideals and traditions. Straight thinking and unselfish action are needed to provide the intelligent control and direction necessary for a successful and enduring industrial growth.

Industrial Development in North Carolina

By C. K. BROWN, Ph.D.

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THE political boundaries of the State of North Carolina do not mark the confines of a distinct economic or commercial area. From east to west the state consists of low-lying plains, rolling hills, and towering mountains. On her coast Nature has provided no great navigable estuary, no potential harbor of importance. Her rivers are neither large nor navigable for any considerable extent. Some of them empty outside her borders, and some of those that do reach the sea within the bounds of the state empty into land-locked sounds where navigation is extremely difficult. Half of the state leans commercially toward Norfolk, to which it as naturally belongs as does a corresponding portion of Virginia. A large part of the other half historically turned its face toward the ports and the commercial towns of South Carolina.

The section west of the Blue Ridge is cut off from the rest of the state by the highest and most closely knit mountain range in Eastern America. There are thus no great outlets to the sea, no gaps to the West. The mountain range was not even bridged by a railroad until 1882. The state has never been able, despite heroic efforts, to make the traffic flow east and west within her borders. The principal railroad lines run north and south, carrying North Carolina products to primary markets outside of the state. Historical developments in transportation, based on geographical conditions, have given the state a level of freight rates that is high by any test, and especially high as compared with the

level enjoyed by her immediate neighbor on the north.

Within the whole state there is no point where one would know that a great city must grow—no geographical feature comparable to those which made Norfolk, St. Louis, Chicago, or Pittsburgh. In 1920 there were but fourteen towns in the state with more than 10,000 population. The largest of these towns had less than 50,000 inhabitants. There are no great mineral resources in the state—no iron, no oil, no coal of present significance.

COMPARATIVE INDUSTRIAL POSITION

Despite all these disadvantages the state has risen, principally within the past quarter of a century, to a position of no mean importance in manufacturing industries. In 1927 she ranked fourteenth among the states in the value of manufactured products, and was one of the fifteen states whose products were worth more than a billion dollars. With the exception of Texas, which slightly exceeded her, and Maryland, which had a production only about eighty-five per cent as large, no state in Dixie even approached her.

If we seek the resources upon which this industry is built we come first of all upon the soils of the state and their agricultural production. It is more than a coincidence that tobacco and cotton are the two chief products of the soil in North Carolina, accounting for over half of the entire crop value, while the factories manufacturing these two products make up the state's principal

industries. North Carolina's cotton production is large, averaging about 850,000 bales annually out of a national product of from 12,000,000 to 16,000,000 bales in normal years. There are other states, however, that grow more cotton than does North Carolina, but owing to a liberal use of fertilizers, there are few areas of large production that have a higher yield per acre.

In tobacco culture, the state ranks ahead of every other state, growing two thirds of the bright flue-cured tobacco produced in the country. Industry in North Carolina thus rests in a measure upon agriculture, and proximity to source of raw materials appears as a consideration influencing the localization of industry in the region.

In the second place, forest resources form the basis of some of the most important industries in North Carolina. In number of establishments, sawmills and planing mills rank first among the state's manufacturing industries, outdistancing the nearest competitor—cotton mills—by approximately a hundred per cent. In number of wage earners they rank second only to the cotton goods industry, but in value of product they are exceeded by tobacco, cotton goods, and knit goods. The general trend in lumber production in North Carolina has been downward since about 1915, and the present annual cut is only about half of what it was at the peak. The yellow pine forests of the coastal region are being rapidly depleted, and the sawmill industry in North Carolina seems destined to follow much the same course as that pursued by the turpentine and resin industry which was its predecessor in the pine forests of the eastern half of the state.

There is still, however, a good supply of hardwoods in the mountains of western North Carolina. These

furnish the basis of the furniture industry, which in forty years has grown from nothing to fifth position in value of output in North Carolina. It is, of course, no more true of the furniture industry than it is of the tobacco and cotton industries that all its raw materials come from local sources of supply; but it cannot be denied that proximity to a considerable source of supply has been of importance.

A third great economic basis of industry in North Carolina has been water power. The narrow little streams of the Piedmont and mountain sections, once thought useless in the economic process because they would not float a boat, now give forth to the state a developed horse power (at the beginning of 1929) of 814,000. This figure, which has jumped in seven years from 330,000 is exceeded by that for the developed water power in no other state of the Union except New York. In 1928 North Carolina produced 2,225 millions of kilowatt hours of electric power. Of this quantity 88 per cent was generated by water power and 12 per cent by fuel power. In the United States as a whole, but 40 per cent of the total electric power was generated by water power. These figures tend to show the extent to which water power has supplied a basis for the development of industry in North Carolina.

LABOR FACTOR AND INDUSTRIAL LEADERS

Fourth, it is frequently asserted that the great availability of labor at cheap rates has been one of the reasons for the rapid development of industry in North Carolina. It is very difficult to evaluate the importance of this consideration. That it has been a factor cannot be denied. That alone it would account for the development

which has taken place should not be asserted.

North Carolina does possess abundant labor supplies. For the most part the laborers in her factories come from the lower classes of farm population, a class of croppers and tenants and small owners, for whom farming has never yielded more than the barest subsistence even in days when the cultivation of the soil paid larger dividends than it has paid within the past decade. They have come to the factories with a low standard of living, with a conservatism of outlook that has made them loyal as a rule to their employers, and with a deep-seated individualism that has made their organization into unions very difficult. But they have also come ignorant of industrial processes, and ill-fitted to adapt themselves to the new conditions of their existence.

As compared with conditions in the industrial East, labor in North Carolina has been abundant and cheap; but it is probable that any of those states which are fairly close neighbors to North Carolina in the South could furnish a labor supply equally good and equally cheap. Indeed, in South Carolina just such a labor population has been supplied as the basis of a development of the cotton goods industry which rivals that of North Carolina. But the fact remains that in these neighboring states, industry as a whole has not grown with the rapidity which has characterized its development in North Carolina—a fact that would indicate that the nature of the labor supply is but one of the elements in the complex of causes.

Finally, some mention should be made of the leaders which North Carolina has developed to carry forward her industrial program. The fact that she could develop such leadership is in considerable degree responsi-

ble for her industrial development. No doubt it may with cogency be contended that leadership is not itself a primary factor; that it in turn derives from more fundamental conditions of time or place. It does not lie within the province of this paper to go into the causes which produce leaders, but the question may here be raised whether leadership does not possess some elements which are at least partially independent of time or place.

Without intimating that other states under conditions otherwise the same might not have developed as noteworthy a list of industrial leaders as has North Carolina, it may be asserted that the latter owes much to such men as Richard J. Reynolds and the Dukes in tobacco manufacturing, to such men as the Cannons and the Cones and the Armstrongs in textiles, and to James B. Duke in power development.

AGRICULTURE AND OTHER INDUSTRY COMPARED

Agriculture is still vastly the most important economic activity of the people of North Carolina if we consider the number of persons who make their living by tilling the soil. But in 1927 the gross value of farm production in the state was estimated by the Department of Agriculture at only \$471,341,000 against a gross product of industry amounting to \$1,154,647,000 and a value added by manufacture amounting to \$593,827,000. In that year the 204,590 wage earners in industry comprised about seven per cent of the entire population. With their families these persons probably make up from a fourth to a third of the total population. This calculation is based on a small estimated size of the family, because it is customary for more than one member of the family to work in the mills, particularly in the cotton mills.

On the other hand, in 1927 fifty per cent of the population lived on farms. It is clear that agriculture still plays an important part in the economy of the state, and it is only quite recently that any considerable portion of its domain has been given over to industry. If we go back to 1899 we find 72,322 wage earners employed in industry in North Carolina and a gross product amounting to only \$85,274,000. As recently as 1914 the gross product was only \$289,412,000, and the number of workers 136,844.

Thus, the larger part of the industrial growth of North Carolina has taken place within the past three decades. If the conditions are as favorable to the development of industry as the more recent growth would indicate, the question arises as to why the development did not make its appearance at an earlier date. The reasons are mostly historical.

Before the war between the States, North Carolina, like her sister states of the South, was agricultural from beginning to end. Indeed, the slave system did not lend itself to any other type of exploitation of the resources of the state. After the war, with the Negroes still living in the state, a continuation of agriculture was the only possible course.

As free men, the Negroes were no more qualified to undertake the processes of industry than they had been before the emancipation. In time, of course, they might have been educated to those processes. But in the meantime, capital was scarce, and the leadership, which under different circumstances and with the requisite capital and labor force would have led the state out into an industrial career, was occupied with social and political problems of pressing importance.

Much property had been destroyed during the war. Not the least of this

consisted of the property rights in the former slaves. The social organization of the state was in ruins. The political organization required rebuilding from its foundations. These problems were magnified by the radical reconstruction program forced upon the state between 1866 and 1876. Not until after the latter date could the people apply their energies without hindrance to the reestablishment of their commonwealth, and then the task required a quarter of a century.

Meanwhile, North Carolina turned back to agriculture, the only thing to which she could turn for a livelihood, and the thing to which recourse after periods of destruction is always easiest. When the turn of the century came, North Carolina was still poor, miserably poor, but her house was in order. Little by little she accumulated capital, sometimes supplementing it with funds drawn in from the outside, and leaders came forward to build industries within her borders.

LOCATION OF INDUSTRIES

Today, the industries of North Carolina (with the exception of the lumbering industry, which sticks to the pine belts of the coast country and to the hardwood forests of the mountains) are localized almost entirely in the Piedmont section. More specifically, most of them are located along the line of the Southern Railway extending in an irregular northeast to southwest direction from Durham through Greensboro, High Point, Thomasville, Salisbury, Concord, and Charlotte, to Gastonia near the South Carolina border.

The cotton goods industry, with its 374 establishments, has its greatest development in and around Gastonia and Charlotte, although many mills are scattered over the Piedmont section and a few are found outside that section. The tobacco manufacturing

industry is localized principally in three towns—Winston-Salem, Durham, and Reidsville—all situated in the northern half of the Piedmont section. The furniture industry centers in High Point and surrounding towns.

How shall we explain this localization of industry in the Piedmont section? Some men have been inclined to explain it on the ground that the land in the Piedmont is less rich than that of the Coastal Plain, making agriculture less profitable in that section. This view seems hardly justified, for some of the best agricultural counties in the state are located in the Piedmont. Frequently they are the same counties which have a large industrial development. It is true that the best tobacco lands are in the east, but there are many good cotton-growing counties in the Piedmont, and the best grain-growing soils in the state are found there.

Historically, perhaps the most important consideration is that the Piedmont in ante-bellum days never had as high a development of the large plantation system as had the eastern counties in the Coastal Plain, and consequently the Negro population was never as dense, relative to the whites. Large slave owners and large plantations worked by slaves were much more rare. There were more small owners, more independent farmers. The loss of property on account of the emancipation of the slaves was by no means so severe in this section as in the black belt of the east, nor was the social and economic organization so disrupted by the conflict of the sixties.

Racial characteristics in the Piedmont have also had an influence. The section was settled by Scotch-Irish and German stock, hard-working and thrifty men accustomed to work with their own hands. A social and economic scheme with the leisure and the

cultural development of the slave-owning aristocracy had never in any great degree been theirs. Consequently, the Piedmont section of the state could show a greater power of recuperation from the devastating effects of war.

Allied to these factors is another of considerable importance. The population in the Piedmont, owing to the relatively small number of Negroes and the greater predominance of small independent farmers and farm operators of white blood, afforded a better supply of labor for industry than could have been secured in the plain country.

Perhaps the most important reason, however, for the localization of the state's industry in the Piedmont section is a geographical one. The water power, upon which that industry in large measure rests, is almost entirely located in the interior of the state. Below the fall line the streams are too sluggish to furnish any considerable power. To be sure, a goodly portion of the potential water power of the state lies in the mountainous country west of the Blue Ridge, but the absence of other favorable factors in that region has prevented a development of industry with the rapidity which has characterized the process in the Piedmont. It is a noteworthy fact that no streams in North Carolina rise west of the Blue Ridge and flow through the ridge to the eastward. The Yadkin and the Catawba, upon which the greatest development of water power has taken place, both rise east of the Blue Ridge. From their sources to the points where they enter the State of South Carolina, they traverse only the Piedmont section of North Carolina.

IMPORTANCE OF COTTON GOODS INDUSTRY

From the standpoint of the number of wage earners employed, the cotton goods industry is decidedly the most

important industry in North Carolina, employing, in 1927, 95,786 workers out of a total of 204,590. The cotton goods industry likewise ranks first in the payment of wages, paying in the same year \$66,149,690 out of the state total of \$158,394,434. As compared with Massachusetts, which with North Carolina occupies the leading place in this industry, North Carolina in 1927 took first place in number of wage earners employed and in gross value of products, but yielded first place to Massachusetts in horse power employed, wages paid, and value added by manufacture.

These facts indicate that, by and large, the Massachusetts production is of finer type goods and that the wage level there is somewhat higher. But these differences are by no means as great as they have been in the past. North Carolina is turning more and more from the making of the coarser cotton products to the making of the finer fabrics. In 1927 there were sixteen dyeing and finishing plants, exclusive of such plants operated in connection with regular cotton mills. Their product was valued at approximately \$19,000,000. In 1919 the corresponding figure was \$1,243,000. The disparity between wage levels has also been decreasing as the industry has developed.

The cotton goods industry of North Carolina is organized for the most part into very small units. The 374 cotton goods establishments turn out a smaller aggregate product than do the 14 establishments manufacturing cigars and cigarettes in the state. Nearly every town in the Piedmont has its local cotton mill. In the establishment of these mills there has been a large element of local pride and local enterprise. The industry has not been so mechanized as to make the operation of small units unprofitable, and each

local community has wanted its own factory. In many instances, the comparatively small capital required has been raised by local subscription and the mill has been operated as a local undertaking. To what extent this course of development may have been responsible for the recent distress of the cotton mill industry, it is not the purpose of this paper to inquire. Of late years there has been some tendency toward consolidation, but this movement has not reached significant proportions.

OTHER INDUSTRIES

As contrasted with the cotton mill industry, the manufacture of tobacco, which is the most highly mechanized industry in the state, has developed in very large units. This is especially true of that branch of the industry which manufactures cigarettes. The Census of Manufactures for 1927 listed six establishments in North Carolina manufacturing cigarettes to the value of \$326,438,332. This is about fifty-nine per cent of the entire production of the United States. In the same year, eight establishments in the state manufactured \$84,982,032 worth of chewing and smoking tobacco which was four times the amount produced by Kentucky, North Carolina's closest rival.

Cigar-making, however, has enjoyed no great development in North Carolina. In 1927, eleven establishments made \$1,203,986 worth of cigars, but this was an insignificant proportion of the total production of the country. As has already been said, the principal tobacco factories of the state are located in Winston-Salem, Durham, and Reidsville. Taking tobacco products as a whole, the industry considerably exceeds the cotton mill industry in value of output, but the number of men employed is scarcely a fifth of that in the cotton mills.

The knit goods industry ranks third in North Carolina in value of products, with an output valued at \$61,365,806 in 1927. It employs more men than any other industry in the state except lumbering and cotton manufacturing. Like the cotton goods industry, but even more noticeably so, the knit goods industry has developed in small units. The volume just mentioned was produced by 128 establishments, thus giving an average output per establishment of about \$475,000. The corresponding average for the 374 cotton mills was approximately \$850,000. There are, however, some very large knit goods mills in the state, notably those of the Durham Hosiery Company at Durham.

Next to the knit goods industry in point of value of output, ranks the furniture industry, which in 1927 had a product amounting to \$53,551,220. Again the establishments are small—there were 143 with an average of about one hundred wage earners each and an average annual product of less than \$400,000. While the center of this industry is found at High Point and the nearby town of Thomasville, furniture factories are found at numerous other points. Notable development has taken place at Winston-Salem, Hickory, and Morganton.

The furniture manufactured is principally diningroom and bedroom suites made from the hardwoods which the southern highlands supply. North Carolina now ranks sixth among the states in value of furniture manufactured, but Illinois produces twice as much as North Carolina, and New York three times as much. Nevertheless the state is recognized as one of the important production centers of the country. Since 1913, annual furniture expositions, similar to those held in Chicago, have been held in High Point.

The sawmill and planing mill in-

dustry still employs a large number of men in North Carolina—about 21,000 in 1927—and the annual product is about equal to that of the furniture industry. The large number of establishments—there were more than 750 in 1927—indicates that there are still many small sawmills operating in the forests of the state. This industry offers employment for a part of the year to many people who during the cultivating season devote a part or all of their time to agriculture. Negro labor is very largely employed, especially in the pine forests of the Coastal Plain. The total wage bill is low, partly on account of irregularity of employment and partly on account of the unskilled nature of the larger part of the work. The lumbering industry, especially in the pine-growing areas, is one of waning importance in North Carolina.

GENERAL OBSERVATIONS

These five industries—cotton goods, tobacco, knit goods, furniture, and lumbering—account for seventy-five per cent of the total annual product of manufactures in the state, and for eighty per cent of the wage earners engaged in manufacturing industry. The extent to which diversification in industry has taken place is partially indicated by the size of the differences between these percentages and 100. The Census of Manufactures lists some fifty-six other industries operating in the state, not to mention some that are unclassified. At least twenty-nine of these other industries had an output of over \$1,000,000 in 1927, while ten of them produced more than \$5,000,000 worth of goods each.

Prophecy with respect to the future of industrial development in North Carolina is a very dangerous pastime. Some general trends may, however, be noted. The lumbering industry is

waning with the decline of the stand of saw timber. Reforestation has not yet done anything to give it a new impetus. Within another generation, however, the work of the Government in western North Carolina may bear fruit. The tobacco industry goes on from big things to bigger, apparently without any attention to the periods of depression and prosperity which rock the rest of the business world. The textile industry, both North and South, has been in the doldrums for the past decade. Whether in the coming decade the mills will move southward with accelerated or diminished rate is problematical. In the long run, the prospects for growth in the furniture industry appear to be bright.

THE OUTLOOK

Looking at industry as a whole, one rather disconcerting fact comes to the front. The larger part of the potential water power of North Carolina has already been developed. At the beginning of 1929, when the developed water power of the state amounted to 814,000 horse power, the potential water power (including both developed and undeveloped sites) available ninety per cent of the time amounted to only 852,000 horse power, while that available fifty per cent of the time was estimated at 1,160,000. It is true that the figure for developed water power represents the capacity of installed water wheels or turbines, which may be

considerably greater than the potential water power available ninety per cent of the time or even fifty per cent of the time on the sites that are already developed.

At any rate, however, the best sites in the state have been developed, and in future development the state must expect to be confronted with diminishing returns because of the necessity of using the poorer sites. Such returns will be reflected in higher costs for industry. Of course, such an eventuality may be postponed for a considerable period of time or counteracted in large measure by more adequate public regulation of the power industry. Also, engineering improvements in the future may operate to reduce the costs of power production.

On the brighter side, too, it may be pointed out that North Carolina has some low-grade deposits of iron and coal—that is, low grade as compared with deposits of these minerals now being mined in other sections of the country. In time, it may become profitable to mine these deposits; and conceivably they may become the basis of a future era of industrialism in the state, if the day arrives when other sections of the country, now more favored than North Carolina in the possession of natural resources, are confronted in their mining operations with the same diminishing returns that now confront North Carolina in the production of water power.

The Industrial Development of Tennessee

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TENNESSEE affords a good illustration of the thesis that economic, political, and personal conditions have their roots in climate and topography. When outside the state, every native is proud of the fact that he is a Tennessean; but within the state, he is more than that; he is an *east* Tennessean, a *middle* Tennessean, or a *west* Tennessean. Probably in every state, for purposes of convenience and definiteness, natives speak of portions of their state as east, west, north, or south. But in Tennessee, east, middle, and west are not casual matters; they represent definite economic as well as topographical divisions, and to some extent these divisions are political. In 1860, east Tennessee was Republican; and it still is. Middle Tennessee is Democratic; west Tennessee is decidedly so. These facts are of interest when one considers the industrial development of the state. Were it not for the fact that the major political parties are changing in principle, a more pronounced change in political alignment would be noticed as industrialization proceeds.

PHYSICAL CONDITIONS

East Tennessee is largely mountainous, with altitudes rising to 2,400 feet above the sea level; contrasting with a maximum of 1,000 feet in middle and 400 feet in west Tennessee. Middle Tennessee may be said to have its situation in a basin, bounded on the east by the Cumberland Plateau and on the west by what is known as the Highland Rim. West Tennessee slopes downward to the Mississippi, ending in

rich bottom land. The average number of days in the growing season varies from 172 in the extreme northeastern tip of the state to 219 in the extreme southwestern section. In east Tennessee the average number of days in the growing season is 180; in middle Tennessee 190-200; in west Tennessee the average is generally above 200. The mean annual temperature ranges from 53 degrees in the east to 59 degrees in the west. Past experience leads farmers in east Tennessee to beware of killing frost ten days later in the spring than in the middle and west sections. In the fall, killing frost may be expected five days earlier in east Tennessee than in the rest of the state. Rainfall conditions (time and amount) are least favorable in east Tennessee. It is evident, therefore, that the eastern section is not so well fitted for agriculture as are other parts of the state.

Based on the above considerations, one would expect varied agriculture to thrive in middle Tennessee and specialized agriculture to predominate in west Tennessee, with hard-pressed farmers barely holding their own in east Tennessee. Similarly, considering only matters of climate, manufacturing should find encouragement in the eastern section of the state with its equitable climate, mild in winter and comfortable in summer. In the east, the hard lot of the farmers, particularly the mountaineers, leads them readily to accept manufacturing employment. To the extent that the agricultural situation is unfavorable, manufacturing employment becomes attractive.

INCREASE IN MANUFACTURING

In 1928 the total value of Tennessee's farm crops was \$229,060,000. In 1927 (1928 figures not available) the value of her manufactured products was \$614,040,524.¹ Value of manufactured products exceeded that of farm crops by \$286,061,524, or 125 per cent. Judged by the standard of production, Tennessee appears to be more industrial than agricultural. On the other hand, much of the manufacturing is concentrated in a few counties.

Since 1880, the value of manufactured products has increased over \$550,000,000. The increase up to 1919 was at the rate of over one hundred per cent per decade. Since 1919, the value has been increasing, but at a decreasing rate. The percentages ignore changes in the price level.²

From statistics of gross income reported by corporations to the In-

ternal Revenue Department for income tax purposes, including those firms reporting non-taxable net income, it is apparent that manufacturing is increasing along all lines. In 1927, total manufacturing, based on gross income reported, showed an increase of 392 per cent over 1916. The smallest gain shown was in metal products, which increased only 100 per cent. The largest was in leather and leather products, which enjoyed an increase of 1,862 per cent. Food products, with which statistics concerning beverages and tobacco are combined in the Revenue Report, increased 946 per cent, while textiles and textile products increased 567 per cent. This growth is to be explained by the existence of an adequate supply of labor reasonably priced from the standpoint of the employer, and the presence of raw materials in considerable quantities—coal, wood, cattle, and grains.

TABLE I—INCREASE IN TOTAL GROSS INCOMES BY INDUSTRIES
1916–1927

Industry	Increase in Dollars	Per Cent
Total manufacturing.....	\$368,931,902	392
Food products, beverages, and tobacco.....	121,120,599	946
Textiles and textile products.....	78,706,843	567
Lumber and wood products.....	73,222,264	446
Chemicals and allied substances.....	38,051,745	352
Metal and metal products.....	16,804,278	100
Stone, clay, and glass products.....	15,778,894	458
Printing and publishing.....	13,381,192	246
Mining and quarrying.....	17,893,371	113
Transportation and public utilities.....	15,454,076	23

¹Statistics for farm crops are from the *Blue Book of Southern Progress*, Manufacturers' Record, Baltimore, 1930. The statistics for 1927 are from the Federal Census of Manufactures, 1927.

²The percentages are derived from U. S. Census figures, which show the following: Value of Tennessee's manufactured products was \$37,074,886 in 1880; \$92,749,129 in 1889; \$180,216,548 in 1909; \$556,253,000 in 1919; and \$614,040,524 in 1927.

Percentages are illuminating so far as they go, but they do not indicate the *importance* of the increase. Table I shows the latter.

The Treasury Department's "Statistics of Income" conceals the identity of certain important industries, in which an individual business so predominates as to be revealed if the

industry were named, by classifying them as "Other Industries." This fact must be borne in mind in considering what follows in this paragraph. The largest gross income was reported, in 1927, by the industries engaged in the preparation of food products, beverages, and tobacco. These industries reported a gross income of \$133,931,178, or approximately 29 per cent of the total gross income reported for manufacturing. Textiles and textile products, with a gross income of \$92,575,970, accounted for 20 per cent of the gross manufacturing income of the state, while lumber and wood products, with a gross income of \$89,671,707, accounted for 19 per cent. Incidentally, although the group classified as transportation and public utilities showed an increase in the period 1916-1927 of only 23 per cent, or \$15,454,076, it reported in 1927 a gross income of \$84,133,983. The small increase is due, of course, to the rate regulations to which this group is subject.

ATTRACTIONS TO INDUSTRY

That certain industries find it advantageous to locate in Tennessee is evident; but just why they do is not so apparent. It is clear that Tennessee has attractions to the manufacturer, such as water power, coal, minerals, forests, cheap land, plentiful labor supply, and accessibility of raw materials and markets. But just which of these is the deciding factor in individual cases, it is difficult to determine.

All other factors being equal, industries will locate where land is cheap. This may be one of the reasons for the development of what might be called a new town, such as Kingsport in east Tennessee. Kingsport has been built, almost from the ground up, as a manufacturing center. Prior to 1910 there were hardly as many people in the

town as are now in the high school band. Wood is brought from the surrounding forests and made into paper with some of the chemicals manufactured locally, which in turn is made into books by one of the largest book manufacturing plants in the world. Much of the labor is from nearby mountains.

But other factors are not always equal. Much of the wood used for the manufacture of rayon in Carter County is not derived from the local forests, but is brought in. Nearness to power, accessibility of markets, and supply of labor are evidently the factors in this case. Further, once an industry has been established, it tends to draw other businesses of the same kind to the locality, through what may be described as "community division of labor." Labor in a given community tends to become adapted for use in a given industry. For example, a glass manufacturing establishment in Kingsport has found it necessary to import certain of its labor from France until such time as a specialized labor supply can be developed in east Tennessee. The Aluminum Company of America has been and is locating in Tennessee because of its water-power possibilities, among other reasons. With the completion of Tennessee's road-building program, the further development of community division of labor, and the ironing out of labor difficulties, the industrialization of Tennessee may be expected to assume a more rapid rate.

POPULATION MOVEMENTS

Turning now to a more detailed consideration of the situation within the state, it should be noted that although the center of population in the United States is moving westward, that of Tennessee is moving eastward. Just as much of England's predominance is due to her early acceptance of the industrial revolution because of her

location and resources, so Memphis, in west Tennessee, owes much of her present standing to the fact that she was located on the banks of the Mississippi in time to take advantage of the heyday of river trade. Memphis is the largest city in the state and is followed in rank by Nashville, the capital, in middle Tennessee and by Chattanooga and Knoxville in east Tennessee. The trend in population is indicated by the experiences of the counties in which these cities are located.

In the twenty-year period 1900-1920, the urban population of Shelby County with Memphis increased only 6.1 per cent; that of Davidson County with Nashville, only 4.7 per cent; while that of Hamilton County with Chattanooga increased 11.1, and that of Knox County with Knoxville increased 24 per cent. By urban population is meant people living in towns of over 2,500. Clearly, the trend of urbanization is toward east Tennessee.

Thirty-nine of Tennessee's ninety-five counties contained, in 1920, towns of over 2,500 population. Of this number, but twenty-seven belonged in this category in 1910, and but twenty-one in 1900. Counties having towns of more than 2,500 population increased thirty-one per cent in the decade 1910-1920, and forty-four per cent in the period 1900-1920. The increase in the number of such counties in east Tennessee in the decade 1910-1920 was sixty-six per cent as against thirty-one per cent for the state, and from 1900 to 1920 it was over one hundred per cent as against forty-four per cent for the state.

Of those counties having, in 1920, over fifty per cent of their population urban, Knox County, in east Tennessee, showed the greatest gain for the period 1900-1920; and most of its fifty-four per cent increase in urban population took place in the decade

1910-1920. In regard to changes in total rather than urban population, it is of interest to note that during the period 1910-1920, in spite of an average increase of seven per cent in total population per county, thirty-seven counties reported a decrease. What was back of these changes?³

MIGRATION FOLLOWS INDUSTRY

There appears to be, in Tennessee, a definite relation between value added by manufactured products, and density of population per square mile; between increase in manufacturing and increase in population. The four counties which added greatest value by manufacturing in 1920, Shelby, Hamilton, Davidson, and Knox, had increases in population during the period 1910-1920 ranging from twelve to twenty-nine per cent. Of the nineteen counties which ranked next in value added by manufacturing, only three had decreases in population; the others had increases. Of the thirty-seven counties which suffered a decrease in population, twenty-seven are in the group of thirty-seven counties having lowest output of value by manufacture. It must be more than a coincidence that the counties having least manufacturing suffer greatest losses in population.

Other conditions being favorable, the existence of an adequate labor supply acts as a magnet to manufacturers. Probably, therefore, the presence of a sufficient population has proved an attraction to capital. But from the facts noted it is quite evident that capital itself has acted as a magnet, stirring labor into mobility and

³The percentages used in the discussion of changes in the Tennessee counties (population and other matters) were calculated by the writer upon the basis of county statistics found in *Tennessee, Economic and Social*, by C. E. Allred and staff, published by the University of Tennessee.

drawing it from some counties into others.

Middle Tennessee experienced losses in fifty per cent of its counties, while the other sections showed decreases in slightly less than one-third of their counties. In Fentress County, among the Cumberland Mountains in middle Tennessee, a forty-per-cent increase in population has been experienced since 1910, due to the development of the lumber industry. Prior to 1910 the growth of this area had been delayed owing to lack of railroad facilities. Lawrence County, on the southern border of middle Tennessee, owes its thirty-four-per-cent increase in population during this period to a migration of farmers from northern Alabama because of adverse conditions caused by ravages of the boll weevil. The development of knitting mills, pottery plants, and railroad shops led to a jump of 2,900 per cent in the urban population of Unicoi County in east Tennessee during the period 1910-1920. Increases in population in Shelby, Hamilton, Davidson, and Knox counties have evidently been due to manufacturing, as these counties contain the greatest percentage of the state's urban population.

URBANIZATION

If labor is becoming mobile, where does it move from, and where does it go? Of the thirty-seven counties showing a decrease in population, twenty-eight show a decrease in *farm* population. This indicates a drift to the towns and cities, and shows the changed Tennessee which is emerging in the era of southern industrialization.

Not all the drift, however, is to urban centers. Nine of the thirty-seven counties suffering (or enjoying; much depends upon the point of view!) a decrease in *total* population received

increases in *farm* population. This shift may have been caused in part by the existence of more satisfactory agricultural conditions in some counties than in others; but part of it was undoubtedly due to the decline of certain small towns which lost a portion of their population to larger capitalistic centers and a portion to the country.

Five of the counties which had increases in farm population suffered declines in certain towns, indicating a population shift within the county. This is further indicated by the fact that, of thirty-eight counties which showed a decrease in population, ten showed an increase in the percentage living in towns of over 2,500. Of the ten, two showed an increase in farm population; and, since there was a decrease in the *total* population of these counties, the increase in *farm* population must have come from towns under 2,500.

In other words, the statistics of population indicate, in Tennessee, a shift from the country to the larger towns, with the population of the smaller towns dividing into two streams, one flowing to the country, the other pouring itself into the larger towns. In most instances, however, the migration seems to be mainly to the larger towns. With the growth of manufacturing, Tennessee is becoming urbanized as well as industrialized; the large towns are growing larger, while the small towns are becoming smaller.

AGE CALCULATIONS

At what age do people leave the farm and move to the city? The writer knows of no statistics which definitely show this for Tennessee; but statistics showing per-cent distribution of population, children and adults, indicate an answer to the question. Urbanization of the state is *not* being

brought about through the birth rate; i.e., there is no reason for believing that the birth rate is greater in the towns than in the country. As a matter of fact, population statistics indicate the opposite condition.

In the city counties, containing respectively Jackson, Knoxville, Chattanooga, Nashville, and Memphis, the percentage of population in 1920 under fourteen years of age was: Madison 31.6; Knox 30.1; Hamilton 28.2; David-

son 25.9; and Shelby 24.8. The greater the density of population, the less the percentage of population under fourteen years. Polk County, which ranks 74 out of 95 in population per square mile, had, in 1920, 42.2 per cent under fourteen years as compared with Shelby County's 24.8. The density per square mile of Shelby County was 272; of Polk County, 33. Incidentally, density of population in Shelby County increased from 272 in 1920 to 305 in 1926, while that of Polk County remained stationary. With an occasional exception the same disparity between density of population and the birth rate is found in most of the counties.

Curiously enough, the percentage of adults over twenty-one years seems

to vary inversely with the percentage of children under fourteen. This means that the number of people between the ages of fourteen and twenty-one is about the same, from the standpoint of percentage, in each county. In connection with a consideration of migration from the country to the towns these percentages are significant. At what age do people leave the country to migrate to the towns? Table II indicates an answer.⁴

TABLE II—PERCENTAGE DISTRIBUTION OF POPULATION IN CERTAIN TENNESSEE COUNTIES

County	Percentage of Population		
	Under 14 Years	21 Years and Over	Between 14 and 21
Polk.....	42.2	43.7	14.0
Clay.....	40.5	44.6	14.9
Fayette.....	39.6	44.9	15.5
Morgan.....	38.2	47.3	14.5
Marion.....	37.5	47.3	15.2
Lauderdale.....	36.8	48.5	14.7
Coffee.....	36.0	49.9	14.1
Dyer.....	34.4	50.9	14.7
Rutherford.....	33.2	52.1	14.7
Washington.....	31.4	55.1	13.5
Shelby.....	24.8	62.4	12.8

son 25.9; and Shelby 24.8. The greater the density of population, the less the percentage of population under fourteen years. Polk County, which ranks 74 out of 95 in population per square mile, had, in 1920, 42.2 per cent under fourteen years as compared with Shelby County's 24.8. The density per square mile of Shelby County was 272; of Polk County, 33. Incidentally, density of population in Shelby County increased from 272 in 1920 to 305 in 1926, while that of Polk County remained stationary. With an occasional exception the same disparity between density of population and the birth rate is found in most of the counties.

Curiously enough, the percentage of adults over twenty-one years seems

In each of the counties, between fourteen and fifteen per cent of the population is over fourteen years of age and under twenty-one years. The counties containing the four largest cities have the smallest percentage of population between fourteen and twenty-one years of age: Shelby, 12.8; Davidson, 13.2; Knox, 13.8; and Hamilton, 14.6. We conclude, therefore, that the increase in population in the urban contrasted with the rural sections has been due, not to differences in the birth rate nor to the migration

⁴ In order to provide a representative sample, the writer has included in Table II statistics for every tenth county, in a descending order; i.e., starting with Polk County, which has the largest percentage of population under 14, and ending with Shelby County, which has the lowest percentage.

to the towns and cities of youths in their teens, but the migration of adults who see greater opportunities in the towns. The opportunity which they see is connected with industrial development.

Tennessee's urban growth has not been due to immigration from abroad or from the North. Her foreign-born population numbers only 15,500, and but 54,000 of her people were born north of the Mason-Dixon Line.

SUMMARY

In summary it may be said that Tennessee's industrialization is indicated by her increased manufacturing output. In 1909 the value of her manufactured products was \$180,-217,000. In 1927 their value was \$614,040,524. During the same period the value of her farm products in-

creased only \$70,766,790. Tennessee is proving attractive for manufacturing because of her natural resources and abundance of native-born American labor. Although the wages paid seem low, judged by northern standards, in the majority of cases they mean an improved standard of living for those leaving farming and mountaineering to enter manufacture.

Tennessee's industrial development has caused a migration to the cities from the country and the smaller towns. In time this will create certain urban problems, devoid, however, of the complications caused by the presence of the foreign element. In the meantime, urbanization means greater advantages from the standpoint of comfort, education, and general culture. The day of industrialization is just dawning.

Industrial Alabama

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ALABAMA is the iron and steel manufacturing state of the South, and dominates the cast-iron pipe industry of the United States. Yet it is a state of diversified products. It ranks fourth among the Southern states in textile manufacturing, retains some importance in the lumber industry, and produces cement, chemicals, paper, automobile tires, and freight cars, all in quantity.

The real importance of Alabama in the industrial world is comparatively recent. It is of the twentieth century, and rather of the second quarter of that century than of the first. For that reason we shall pass rapidly over the industrial history of the state, and endeavor to describe principally the recent changes and the present situation.

HISTORICAL REVIEW

The history of manufactures in Alabama is typical of that of the whole South to the extent that it records a marked decline of industrial activity during the half-century following the Civil War. Dean Brooks has shown that the South as a whole produced fifteen per cent of the manufactured goods of the country in 1860 and did not again reach that proportion of the total national output until 1910.¹ Alabama had made a good start in many branches of manufacturing in 1860. The Civil War destroyed most of these beginnings.

The record of the next fifty years is

¹ Brooks, "The Industrialization of the South," in *The Industrial South*, Emory University, Georgia, 1929. See especially pages 15-16.

one of slow but gradually accelerating recovery, and of the laying of foundations for future industrial greatness. The story of the rise of the iron and steel industry in the Birmingham district is too familiar to need repetition. In the last decade of the nineteenth century it seemed for a time that Alabama might perhaps become the leading state of the Union in the production of pig iron; but the swift exploitation of the richer Lake Superior ores changed the trend. None the less, Alabama iron won an important place in the industry by 1900, and about the same time the state attained a predominance in the manufacture of cast-iron pipe. In the following decade the steel industry became firmly established, largely through the labors of George Gordon Crawford.²

We may say that the era of recovery in Alabama terminated with the World War, and that the close of that struggle marks the beginning of the contemporary period of economic and social progress. The monetary inflation of the World War years and the war boom in iron and steel products combine to give us an unfairly favorable picture of manufacturing activity in the census of 1919. This is true in regard to Alabama, as it is for the country as a whole. Since, furthermore, the Census of Manufactures of 1919 is not entirely comparable to the later biennial censuses, we shall utilize the figures of these biennial censuses from 1921 to 1927 to give a picture of the recent growth of manufacturing in Alabama.

² See Mims, *The Advancing South*, pp. 92-109, for a brief sketch of his work.

TABLE I—GROWTH OF MANUFACTURING IN ALABAMA, 1921-1927

Census	Establishments	Wage-earners	Wages	Cost of Materials	Value of Products
1921.....	1,855	82,748	\$66,747,237	\$186,407,328	\$302,808,591
1923.....	1,996	109,620	95,205,227	323,665,655	541,728,687
1925.....	2,349	116,599	101,242,839	325,684,194	552,824,044
1927.....	2,355	119,093	105,488,817	317,493,407	550,372,126

Table I portrays the general trend of industrial development in Alabama during the contemporary period, as far as complete production statistics now (October 1, 1930) carry us. Making due allowance for the fact that 1921 was an abnormally depressed year, and 1927 a somewhat depressed one, and that 1923 and 1925 were years of prosperity, we see that the state has been making steady but not spectacular progress. A moderate and rather regular upward trend is shown in every aspect of industry.

But until 1927 there were no unusual or especially outstanding gains registered by industry in Alabama. The impressive developments which have attracted national attention occurred chiefly in 1928. They will not be fully

DIVERSIFICATION OF INDUSTRY

Before relating these occurrences, however, it is desirable to call attention to the leading branches of industry in Alabama. These are shown in Table II.

In this table we have combined the two census items of iron and steel products, and have also added planing mill products to lumber and timber products. This gives a more compact—and perhaps a more correct—presentation of the facts. The iron and steel industry of course ranks first in value of products, and cotton goods are not a close second. Lumber still holds third place. Cast-iron pipe commands fourth place only, though Alabama produces nearly half of the entire na-

TABLE II—PRINCIPAL MANUFACTURING INDUSTRIES IN ALABAMA, 1927 *

Rank	Industries	Value of Products
	All industries.....	\$550,372,126
1	Iron and steel: blast furnaces, steel works, and rolling mills....	122,943,350
2	Cotton goods.....	80,833,617
3	Lumber, timber products, and planing mill products.....	67,140,249
4	Cast-iron pipe.....	42,590,922
5	Coke (not including Gas-House Coke).....	25,510,423
6	Steam-railroad shops.....	20,187,869
7	Cottonseed oil, cake, and meal.....	14,662,794
8	Foundry and machine-shop products.....	13,740,983

registered in the 1929 census figures of manufacturing activity, because they consisted of new plant construction which will not come into full normal operation earlier than 1931, and perhaps not then.

tional output, and more than twice as much as the next rival state.

This table (II) reveals a rather considerable diversification of industry. There are eight industries shown to

* Biennial Census of Manufactures, 1927.

have a product value of over ten million dollars annually. Furthermore, there are probably two additional industries of this rank concealed in the "all other industries" entry in the 1927 Census of Manufactures. These are cement and chemical products, not including fertilizers.

There were seven cement plants in Alabama in 1927, and information from trade sources indicates that the value of products amounted in that year to twelve and a quarter million dollars. The most important electro-chemical plant in the South is located at Anniston; there are two large explosives plants in the Birmingham area, and two sulphuric acid plants. The combined product of these and other smaller chemical industries probably also exceeded ten million dollars. There were thus some ten major manufacturing industries in the state in 1927.

A survey of the complete census shows nine additional industries with an annual product of more than five million dollars. These are: beverages, bread, clay products, fertilizers, knit goods, printing and publishing, slaughtering and meat packing, structural steel work, and wood preserving. How many more are hidden in the "all other industries" item, we do not know.

NEW INDUSTRIES INAUGURATED

The remarkable industrial happenings between the beginning of 1928 and the present writing, above alluded to and now to be related, have had the effect of increasing the diversification of industry in Alabama. It is true that the leading industries have continued to gain. The expenditures for new construction made by the iron and steel plants of Alabama between January 1, 1928 and October 1, 1930 are estimated from good but not official sources at twenty million dollars. The cotton mills have made at least equal progress.

During 1928 Alabama installed more new spindles than did any other state.⁴

But the most notable industrial event of these three years was the inauguration of manufacturing industries new to Alabama. During the one year 1928, the production of eight new types of manufactured goods was begun on a large scale. These products were: kraft paper and bags, automobile tires, steel freight cars, copper wire, condensed milk, full-fashioned silk hosiery, braid and ribbon, and broad silks.

The Gulf States Paper Corporation and the International Paper Company built large kraft paper and bag factories at Tuscaloosa and Mobile respectively. The Goodyear Tire and Rubber Company constructed a large tire factory and a rubber reclaiming plant in Gadsden. The Pullman Car and Manufacturing Corporation built a great steel car plant at Bessemer. The General Cable Corporation located a copper wire plant at Mobile. Libby, McNeill and Libby put in operation a milk condensary in Tuscaloosa. Four full-fashioned silk hosiery mills were built at Anniston, Decatur, and Scottsboro. Braid and ribbon mills were erected at Gadsden and Huntsville, and broad silk mills at Brewton and Eufaula. Alabama has indisputably become a state of diversified manufactures.

A comparison with other states reveals some significant facts. The National Electric Light Association and the Metropolitan Life Insurance Company have made a joint survey of industrial development in the United States and Canada for the years 1926 and 1927.⁵ This survey reveals the

⁴ *Year Book of the National Association of Cotton Manufacturers*, 1929, pp. 192-193.

⁵ *Industrial Development in the United States and Canada*. A cooperative survey by the Civic Development Committee of the National Electric Light Association and the Policyholders Service Bureau of the Metropolitan Life Insurance Company. No date. See pp. 8-9 for table

fact that, during the biennium covered, Alabama was second in the South and ninth in the United States in gross gains of employees. Its loss of plants and employees, by going out of business and by relocation, was so small as to be negligible. Its net gain in employees was the largest made by any Southern state, and the third largest in the Union. Yet this information is for the two years preceding the great outburst of industrial activity in Alabama in 1928. None of the plants that we have just listed were counted in the survey quoted. The movement has been slowed down but has not been stopped by the cyclical depression of business during the latter part of 1929 and in 1930.

It should again be remarked that these new developments in construction have not yet made their effect felt in production. While all the projects above named are now complete and in operation, their full results will not be manifest until the development period is over, and until the next upward swing of the business cycle brings industry again into full activity.

DECENTRALIZATION

Another notable feature of the industrial life of Alabama is the tendency to decentralization. To be sure, in the Birmingham metropolitan district, Alabama has the largest concentrated manufacturing district in the South. Jefferson County, containing the cities of Birmingham, Bessemer, and Fairfield, and many incorporated and unincorporated towns, is the most populous county in the South except Orleans Parish, Louisiana. This is due to several causes. The concentration of iron and steel production in Jones Valley was the natural result of the proximity

of coal, iron, and limestone there. Coal fields surround Birmingham, and that city has the cheapest coal in the United States. Owing to its heavy tonnage, Birmingham has attracted more railway lines than any other Southern city. An inspection of a railway map ⁶ reveals the fact that more different systems and more railway lines enter Birmingham than any other Southern city. Birmingham is also the most centrally located city in the South. It is nearer to all other Southern cities of 50,000 or more inhabitants than is any other such city.⁷ These and other causes account for the growth of a great industrial center in Jefferson County.

But in recent years the smaller cities have been making remarkable gains in population and industrial life. Anniston has been an industrial city since its foundation. Gadsden, Tuscaloosa, and other cities have made noteworthy strides in the last few years. In reading the list of major industrial developments in 1928, as given above, one can scarcely avoid being impressed by the wide distribution of these new manufacturing enterprises among the cities of Alabama. And that roster includes only enterprises of major importance.

Complete data covering the many small new industries show that the towns and villages of Alabama are becoming industrialized. The records of the Alabama Power Company disclose the following facts: In 1927 there were 21 new industries located in 17 different communities. These industries represent a total investment of \$15,000,000 and employ 6,000 persons. During the great year of 1928 no less than 38 new industries located in 24 different communities. These industries make up

of gross gains, and pp. 10-11 for table of losses. Net gains are obtained by subtracting the losses from the gross gains.

⁶ *Railroad Junction Points Map of the Southeastern Part of the United States*, Atlanta, Ga.: Foote and Davies.

⁷ *Official Table of Distances*, Washington: 1918.

an investment of \$35,000,000 and employ 8,500 persons. In 1929 there were 32 new industries located in 19 different places, with an investment totaling \$3,000,000 and providing employment for 2,000 persons. Up to July 1, 1930, some 17 industries had located in 17 different communities, with an investment of five and a quarter millions and a labor force of 1,500 persons. It is well to reiterate that these figures embrace only entirely new enterprises, and do not include any extensions of existing plants.

This decentralization is made possible by the extension of electric power lines all over the state, the good transportation facilities of all kinds, and the omnipresent supply of good labor. The tendency meets with the approval of a majority of the state's industrial, financial, and civic leaders. It has not injured the Birmingham district, but rather the contrary.

CAUSES OF ECONOMIC PROGRESS

We have now reviewed briefly, and with consequent sacrifice of detail, the main outlines of the contemporary industrial movement in Alabama. Let us now examine with equal brevity the conditions and the forces which have produced this movement.

First and most conspicuous in the public mind is the remarkable development of electric power generating stations and transmission lines. The Alabama Power Company has materially transformed the state within a few years. The work of the pioneer, Captain Lay, of the Mitchells, and of T. W. Martin in developing power has been as beneficial to Alabama as have been the struggles and the successes of Crawford and his contemporaries who established a successful steel industry.

For some years, Alabama and North Carolina have run neck and neck for the leadership of the South in devel-

oped hydroelectric power. In the summer of 1930, Mr. P. S. Arkwright stated to the Institute of Public Affairs of the University of Virginia that Alabama was then the third state in the Union in hydroelectric development for public utility use, being exceeded only by California and New York.⁸

The hydro plants in the state include six great dams of the Alabama Power Company on the Coosa and Tallapoosa Rivers, and the still larger dam built at Muscle Shoals on the Tennessee River by the Federal Government. In addition to these water power plants, there is a number of steam power plants used for public utility service. The most notable is the very large twin plant of the Alabama Power Company at Gorgas on the Warrior River.

The power development of the Tennessee River in Alabama is incomplete, and the future of the one plant already completed is uncertain. The controversy over the disposal of the Muscle Shoals plant has been very unfortunate for Alabama. The delay and the doubt as to the outcome have retarded the industrial growth of the state. An early settlement would result in great benefit to its people.

The second great reason for the recent economic progress of Alabama is its natural resources. The endowment of the state in coal, iron, and limestone is so well known that we need hardly dwell on it. Besides the "big three," Alabama has marble and other fine building stone, clays, graphite, rock asphalt, and many other minerals of economic importance. Alabama ranks fifth among all the states in the tonnage of coal mined, and fourth in the manufacture of coke. During 1929

⁸ Arkwright, P. S., *Industrial Power Policy for the South*, p. 6. The Alabama Power Company completed in the summer of 1930 a new development at Lower Tallassee which adds a net gain of 72,000 h.p. to the state's developed power.

natural gas was brought into Alabama from the Monroe, Louisiana, field, and has now been piped to nearly all the principal cities of the state.

Alabama's resources of timber are still important. In the coming day of reforestation, the relatively more rapid growth of pine in Alabama and adjacent eastern Gulf states will have a tendency to make this region the center of the wood-using industries. In the new "age of cellulose," this will have a primary importance. The climate is favorable to human activity in manufacturing as well as to plant growth.

TRANSPORTATION ADVANTAGES AND SOCIAL PROGRESS

The third main reason for the events we have been relating is the development of transportation. Alabama is well supplied with railways, and the remarkable concentration of railway lines at Birmingham has already been pointed out.

In the Warrior, Alabama has one of the three principal canalized rivers of the world. It reaches from the port of Mobile through the heart of the state's largest coal field. The city of Tuscaloosa is located on the Warrior, and Birmingham, the river terminal of Birmingham, is less than twenty miles from the industries of that city. A government barge line provides service on the river, and several corporations own their own barges and tow boats. The bank of the upper Warrior is one of the few places in the world where very large steam power plants can be located at the mouth of a coal mine, beside plenty of condensing water, on a navigable stream, and with good rail connections. Development here has scarcely begun, though the South's largest steam power plant has already been built in this favored location.

The state of Alabama has recently completed a ten-million-dollar port

facility at Mobile, the state's seaport, on the outlet of the Warrior-Tombigbee-Alabama-Mobile River System. This work was constructed and is now operated under the supervision of General W. L. Sibert, a distinguished son of Alabama and an engineer of international fame.

The State of Alabama has passed two large bond issues for roads, and has levied automobile license and gasoline taxes to pay for them and to provide maintenance. During recent years the road construction program has been one of the heaviest in the country. This development bids fair to continue. Already, all parts of the state are accessible by paved or gravel roads.

Fourth in order among the causes of the new industrial development, we may mention the great progress made in late years in health, education, and social welfare. The health program has attracted widespread attention. On January 1, 1929, Alabama was rendering properly organized public health service to a larger proportion of its rural population than was any other state in the Union.⁹ A similar situation exists in regard to child welfare. All but three of the sixty-seven counties have county child welfare boards with one or more trained workers in the field. No other state has gone so far in the field of rural child welfare.

The recent improvement of education is a story in itself, and can be no more than mentioned here. The state is very low in comparative educational ranking even now, but its rate of progress in the past few years has been perhaps as rapid as that of any state in the Union. The rise in resident enrollment at the State university, within a decade and a half, from some six hundred students to nearly four thousand, accompanied by still greater proportional advance in faculty and facilities, may

⁹ U. S. *Public Health Reports*, May 17, 1929.

be mentioned as a sample of the educational changes. Undoubtedly the great advances in public health, public welfare, and public education, have played a great part in attracting enterprise to the state and in aiding its success when established.

MARKET OPPORTUNITIES AND LABOR FACTOR

In the fifth place we may call to mind the growth of the southern market as a factor in the growth of manufacturing located to serve that market. The key position of its largest city was pointed out when we were discussing transportation. The southern market has been growing in late years with the increase of population and the economic advancement of the section. Already it is more important than the market offered by many a major foreign country. Alabama itself has shared in the growth of purchasing power. Jefferson County had in 1926 the greatest total purchasing power of any county in the Southeast, comprising 6.7 per cent of the whole income of the section.¹⁰

But Alabama not only offers a growing market itself, and ready access to the large southern market; it is peculiarly well located to reach the Pacific coast and the export trade. The Warrior River and the port of Mobile furnish a very convenient outlet to the South American trade, and heavy materials move by this route through the Panama Canal to California at minimum cost. All this has played a part in the location of new manufacturing plants in Alabama.

The sixth and last factor in the situation is perhaps the most important of all—the labor. Alabama is still primarily a farming state, and a poor one. The standard of living of the rural

population is low. It is a belated standard. It is practically impossible to increase greatly the family income of a large part of this population so long as it remains on the farm. Agriculture on rather poor and rough soils, particularly tenant agriculture, simply will not supply an adequate income under present conditions. Under the stimulus of good roads and other means of communication, and of improved education, these people desire to raise their standard of living. Their only hope is in industry.

There are at present upward of half a million people living in the rural districts of Alabama whose cash income per family does not average five hundred dollars annually. A majority of them are tenants and most of them are white. They are all good workers but they are not for the most part good business enterprisers. Under factory management they produce far more than under their own management.

The lowest wage paid in an Alabama industry is a great step upward for them. They have no prospect of advancement for themselves or their children except through the industrialization of the state. At the most optimistic estimate, it will take two decades to absorb them all into industry. This is the most cogent reason why new industries have come into Alabama. This is the chief benefit of their coming.

The labor factor has been present all along, but latent. It has only been evoked by the power development, the transportation improvement, the social progress of the state, and above all, by the diffusion of knowledge regarding the Alabama situation among the men of capital in other sections. In this sense, the struggles and sacrifices of the people of Alabama to improve their schools and roads and other institutions, and the advertisement of the

¹⁰ *Commercial Survey of the Southeast*, pp. 225-228, U. S. Department of Commerce, Washington: 1927.

state beyond its borders, have been the occasion, if not the cause, of the industrial advance which we have been describing.

EFFECTS OF INDUSTRIALIZATION

The effects of industrialization, no one can yet estimate. The older industrial advance, of the nineties and of the early part of this century, resulted in much of importance. It built one large city and several smaller ones, broke the complete servitude of the state to cotton, and laid the foundations for the larger industrial movement of very recent years.

But Alabama remains even today a predominantly agricultural state. Its health problems are primarily those of rural and small-town life. Its chief educational problem is that of financing schools for a poor, scattered, farming people. Its most sordid poverty is in the rural districts. Its toughest child welfare problems come in large part from the country and the little trading towns.

Even the characteristics and the reactions of a great part of the still limited industrial population were ac-

quired in the country. Social workers and economic investigators from large cities tend to forget or ignore this. They study the people of the mill village and assume that the behavior of the mill people is the result of industry, whereas it is largely carried over from the farm. People who have spent a few years in industry do not lose all the characteristics acquired through generations of tenantry.

What the life of Alabama will be like a generation hence, when industry shall perhaps have increased sufficiently to balance agriculture, no one knows. But it seems reasonable to expect that the mass of people will enjoy a higher standard of living, and that the worst evils of poverty, isolation, and retardation will have been ameliorated. Conflicts and clashes there will be, but probably not more severe than those which attended the beginnings of the mining industry. Difficulties are present in every stage of culture, but certainly the current of industrialization in Alabama seems to be bearing the state in the direction of social as well as economic betterment.

Southern Labor Supply and Working Conditions in Industry

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BETWEEN 1880 and 1920 the number of manufacturing wage earners in the Southern states increased from 318,000 to 1,432,000, an increase of 350 per cent.¹ During the same period the population increased from 16,516,000 to 33,125,000, an increase of only 100 per cent. If the increase in the number of wage earners had been in proportion to the increase in population, there would have been only 636,000 wage earners in 1920. The purpose of the first part of this paper is to discover the nature and the sources of this supply of labor for the manufacturing industries of the South.

INCREASE IN INDUSTRIAL LABOR SUPPLY

In the first place, there was a change in the character of the population. Whereas in 1880 only 52.4 per cent of the population was within the age limits of sixteen and sixty-four, in 1920, 57.3 per cent of the population was within these age limits. The distribution between males and females was approximately the same. There was, however, a considerable decrease in the relative number of the colored population. In 1880, 34 per cent of the labor supply was colored, but in 1920 less than 27 per cent was colored. Colored females lost more relatively than did colored males, while white males gained more than did white females.

These variations made about 900,000

more white males and about 600,000 fewer colored males available for employment than would have been the case if the sexes of both colors had maintained their 1880 proportions; a net gain of about 300,000 males. On the other hand, while there was a gain of about 500,000 white females, there was a loss of nearly a million colored females. Since in 1920, only 15 per cent of the white females were occupationally engaged, while 38 per cent of the colored females were so engaged, the variation in females amounted to a gain of about 70,000 employable white females, and a loss of about 380,000 employable colored females—a net loss of 310,000 employable colored females to offset the net gain of 300,000 white males. Since white males are usually more in demand in manufacturing industries than are colored females, this development constituted a stimulus to the manufacturing industries.

In the second place, changes in the *mores* and other factors have caused a larger percentage of the labor supply to be offered for employment. This is true because of the increase in the relative number of women who are willing to accept jobs. There was a very slight decrease, between 1880 and 1920, in the proportion of the adult males who reported themselves occupationally engaged. In 1920 the proportion of adult males aged sixteen to sixty-four who were occupationally engaged was about 92 per cent. The proportion of females aged sixteen to fifty-nine occupationally engaged in 1880 was only 20.4 per

¹ Based on the census classification of sixteen states and the District of Columbia; Oklahoma and Indian Territory not included in 1880.

cent; but of those aged sixteen to sixty-four in 1920, 24.7 per cent were thus engaged.

If a comparison of coextensive age limits were possible, the increase in the ratio would be even greater. In other words, about 400,000 more women offered themselves for employment in 1920 than would have been expected on the basis of the 1880 ratio. Due to the decrease in the number of colored females, nearly all of this increase in female labor was among white women.

In the third place, there was a positive attraction of labor into the manufacturing industries from other types of gainful occupation. Most of this migration was at the expense of agriculture. In 1880, 35.5 per cent of the total labor supply was engaged in agriculture. In 1920 only 25.7 per cent was thus engaged. The number engaged in manufacturing had increased from 5.6 per cent in 1880 to 11.6 per cent in 1920. The number engaged in other pursuits had increased from 15.4 per cent in 1880 to 21.4 per cent in 1920. Among the males, most of the migration was from agriculture to manufacturing. Among the females, however, most of it was from occupational nonengagement to trade and clerical occupations. The change in the distribution of the labor supply is indicated by the following table.

If we measure increases and decreases in employment in comparison to changes in the available labor supply (persons aged sixteen to sixty-four),

the total surplus of manufacturing wage earners drawn from other sources amounted in 1920 to 770,000 (108 per cent of the expected number). The relative deficit in the number of agricultural workers was 1,631,000; the relative deficit of persons reporting no occupational engagement was 141,000; a combined deficit of 1,782,000. In other words, of 1,782,000 workers who were diverted from agriculture and nonemployment, 770,000 (43.2 per cent) went into manufacturing.

DIFFERENT CLASSES CONSIDERED

The surplus of adult males in manufacturing was 656,000 (122 per cent of the expected number); of females, 114,000 (112 per cent). The deficits in agriculture were 1,416,000 males and 215,000 females. The deficit in the number of unoccupied females was 354,000, while there was a surplus of 213,000 unoccupied males. The combined deficit of males was 1,203,000, 54.5 per cent of whom went into manufacturing. The combined deficit of females was 569,000, only 20 per cent of whom went into manufacturing—most of the other 80 per cent going into trade, and domestic and clerical service.

Married and single women, however, displayed different employment traits. About 62 per cent of the females fifteen years of age and over were married—white and colored in about the same ratio. Only 16 per cent of the white women, however, were occupationally engaged—5.7 per cent of

	Males		Females	
	1880	1920	1880	1920
	Per Cent	Per Cent	Per Cent	Per Cent
Unoccupied	6.2	8.1	79.6	75.3
In agriculture	61.9	43.4	10.0	7.6
In manufacturing	9.9	19.9	1.5	3.1
In other pursuits	22.0	28.6	8.9	14.0

the married white women, and 34.1 per cent of the single white women. Nearly 43 per cent of the colored women were gainfully employed—32.7 per cent of the married colored women, and 57.6 per cent of the single colored women. In all, 12.7 per cent of the married and 41 per cent of the single women were occupationally engaged.

Most of the married women who were employed were engaged in agriculture—40.7 per cent; 34.7 per cent in domestic employment; 11.3 per cent in manufacturing; and 13.3 per cent in other pursuits. Of the single women, only 27.5 per cent were in agriculture; only 22.3 per cent were in domestic service; 12.6 per cent were in manufacturing; and 37.6 per cent were in clerical and other pursuits.

Between 1920 and 1927, another 200,000 workers became engaged in manufacturing, and at least that many left agriculture and occupational non-engagement. Figures are not available, however, to trace the migrations, but it is known that there has been an increase in child labor. It is true that

between 1880 and 1920 the percentage of children aged ten to fifteen, inclusive, who were occupationally engaged decreased from 29.2 per cent to 14.6 per cent; however, recent reports of commissioners of labor in those Southern states where child-labor figures have been highest, indicate a considerable increase since 1920 of the number of children engaged in manufacturing. Many of these children, doubtless, were merely transferred from agricultural engagement; they accompanied their parents in the migration from the farms to the mills.

The distribution of child labor is indicated below; the total number employed was almost the same in 1920 as in 1880.

Child Workers Engaged	1880	1920
	Per Cent	Per Cent
In agriculture	79.3	84.3
In manufacturing	2.4	6.1
In other pursuits	18.3	9.6

The adult labor supply was distributed as follows:

Unemployed	Number	Per Cent of All in Each Classification
Males (16 to 64 years of age)	774,435	8.1
Single white females (15 and over)	1,857,486	65.9
Single colored females (ditto)	491,211	42.4
Single females (ditto)	2,348,697	59.0
Married white females (ditto)	4,409,578	94.3
Married colored females (ditto)	1,137,712	67.3
Married females (ditto)	5,547,290	87.3

Employed	Males	Per Cent *	Females	Per Cent †	Total	Per Cent ‡
In agriculture	4,168,772	43.4	16,599	7.6	4,885,371	25.7
In manufacturing	1,916,717	19.9	287,696	3.1	2,204,413	11.6
In other pursuits	2,748,269	28.6	1,315,736	14.0	4,064,005	21.4

* Of all males aged 16 to 64.

† Of all females aged 16 to 64.

‡ Of all persons aged 16 to 64.

FROM FARM TO FACTORY

Most of the increase in the supply of labor to the manufacturing industries has been at the expense of agriculture; most of it went into the less skilled trades. Negroes, for the most part, have become common laborers. The majority of them, untrained, largely illiterate, and frequently irresponsible workers, have gone into common labor employments in manufacturing, transportation, and domestic service, having the effect of freeing the more skilled white workers, or diverting the natural supply of the more highly educated white labor into the skilled and semiskilled manufacturing jobs. Of the skilled trades, the building crafts have been more receptive to Negroes than any of the others.

The better-grade white rural workers have frequently drifted into the building trades, where they could exercise their ability as all-round mechanics. The masses of untrained, uneducated tenant farmers have sought miscellaneous unskilled or semiskilled employment. Practically all of the textile labor supply has been drawn from this source; indeed, the textile employers appear to have taken the position that such labor is much to be preferred to any other type. These workers, of course, lack territorial and trade mobility; frequently the manufacturers' agents have had to seek out the laborers and provide their transportation to the new employment. They have had few opportunities for cultural or economic development, and have been surrounded by circumstances that encouraged poor productive ability.

They have been drawn from the farms by the constant increase in the inequality between farm incomes and manufacturing wages. For example,

in spite of the migration of agriculturists into manufacturing, the index of average wages in Georgia in 1920, based on 1880 as 100, was 387; the corresponding figure for farm incomes was 342. And there is reason to believe that the difference has increased since 1920—again, in spite of a great emigration from the farms. During most of the time since 1880, also, the average wages of even the lowest-paid industries have been higher than the average income per farm worker.²

Thus the farms have constituted, and still constitute, a great reservoir of unskilled labor for urban employments. As long as the reserve exists, of course, it will constitute a force for the maintenance of low wages and low employee bargaining power in those industries that are open to this type of unskilled, untrained labor. This is particularly true in view of the narrow, prejudiced, unsocial outlook of ruralists and recent ex-ruralists. Nor do the welfare activities of the textile industry usually serve to overcome the immobile condition of this labor force. There appears to be evidence that the mill welfare authorities, while making the physical conditions of life more attractive, have also been interested in training a labor force that will be more skilled for textile employment, but that will have no greater mobility and no broader outlook on life in general than if it had remained entirely untrained.

SOCIAL PROBLEMS CREATED

The migration of large bodies of rural workers and of smaller bodies

² See figures given by Professor Clarence Heer, in *Income and Wages in the South*, pp. 12 and 25, Chapel Hill, N. C.: University of North Carolina Press, 1930. The figures are not correlative to those mentioned above, as Heer's figures for agriculture are in terms of gross income, and the Georgia index was based on agricultural net income.

of women home-keepers into the manufacturing industries created a series of personal problems for the workers and resulted in some new social problems. Instead of more or less self-sufficient individualists, largely independent of social forces, free from discipline, and exercising great initiative in their work, the workers moved into compact settlements, whether city or mill village, became subject to forces of social control that were new to them, suffered from a new and rigid discipline, and eventually lost a large part of their initiating power. In terms of material comforts they probably gained a good deal—better houses, running water, better lighting and sanitary facilities, better opportunities to learn “reading, ’riting, and ’rithmetic,” and so forth. On the other hand, many of them lost their identification with social and political institutions, and in many cases with independent religious institutions. The new dependence upon and the new subjection to social, industrial, and economic control has largely destroyed the earlier independent citizenry.

Ambition is too little stirred. . . . The mill management is too often indifferent or hostile to ambition and independence. . . . As these conditions now exist it is a contented peasantry and not free and independent thinking American citizenry that is being built.³

These problems developed both for those who went to the cities and for those who went to controlled mill villages. In the former, the necessity for self-reliance in finding lodging, seeking jobs, discovering stores, and so forth, as well as mixing with a more diverse population, has maintained much of the ruralist's individual ini-

tiative, while modifying it with a new social consciousness, relationship, and activity. This social consciousness and relationship, moreover, particularly outside of the factory, is horizontal—a relationship of independents, as among equals. In the isolated and controlled mill villages, on the other hand, individual initiative seems to have been largely destroyed; while the new social relationships, both inside and outside of the factory, have been dominantly vertical—a relationship of dependence, as of inferiors on superiors.

THE MILL VILLAGE

The creation of mill villages was not originally a deliberate “diabolical scheme” with regard to the control of the labor supply. Mill villages were a necessity, to care for the housing of the newly congregated and large groups of factory workers. Whether the mills were located in the midst of cities or on the countryside, no houses were available for the accommodation of the workers. There is little evidence of any effort on the part of the employers to use their authority over the villages for purposes of controlling (as contrasted to maintaining) labor prior to 1900, or to any great extent prior to the war. Even during the war, high income taxes, rather than labor relations, are credited with furnishing the stimulus for the development of welfare activities and extensive control of the mill villages.

From the first, of course, the congregation of large numbers of untrained and unsocial ruralists, unused to the necessities of living in groups, created problems of social control; and it devolved upon the management to furnish the solution. In isolated communities, this resulted eventually in management-controlled policing, management-made laws and regulations, management-devised codes of morals,

³ Kilpatrick, William Heard, *Our Educational Task, As Illustrated in the Changing South*, p. 40, Chapel Hill, N. C.: University of North Carolina Press, 1930.

management-influenced schools, management-maintained poor relief during periods of unemployment or in case of accident, sickness, or old age, and management-supported churches. With the inauguration of more extensive activities during the war, and with the development of the idea of the use of village government and welfare activities for the purpose of controlling the labor force (an idea that did not originate in the southern mill villages), these villages entered upon an era of greater industrial significance. What had been the incidental and unconscious effects of prewar mill village superintendence, now became, generally, the primary and deliberate effects of postwar control. While there are doubtless many exceptions to this description, it appears to be generally true.

WAGE RATES

Wage rates and earnings vary, of course, as between jobs, industries, and sections of the South; but in practically all cases they remain below the level of wages paid in the rest of the United States for similar employments. Of the industries employing important numbers of workers, the knit-goods, cotton-goods, and wood-working industries paid lowest wages; and the railroad repair shops, foundry and machine shops, and printing establishments paid highest.

Not only did the industries rank thus with regard to their absolute positions, but also with regard to their wages when compared to the wages paid by those industries in the rest of the United States. Thus, the average wage paid in the knit-goods industry in the South was \$655, which was 59.6 per cent of the average wage paid by that industry elsewhere in the United States. The average wage for the cotton-goods industry in the South was \$671, which was 66.3 per cent of the

average for the other states. And the average wage for the wood-working industries was \$748, which was 62.5 per cent. On the other hand, the average wage for foundries and machine shops was \$1230, or 80.4 per cent of the average for the rest of the country; for railroad repair shops, \$1376, or 89.5 per cent; and for printing, \$1570, or 88.5 per cent of the wages paid in the printing industry elsewhere in the United States.⁴

The former industries are recognized as the ones employing unskilled or semiskilled labor, into which the agricultural reserve can migrate with greatest ease. It is, of course, improbable that the labor reserve and immobile labor forces are the only factors in maintaining low wages. It has been pointed out that the relation which the average value added per worker in all manufacturing industries in the South bears to the similar figure for the North, 73 per cent, is nearly the same as that which average wages in the South bear to average wages in the North, 67 per cent. In the textile industry the ratio for value added is 89 per cent, while the ratio for wages is only 58 per cent.⁵

Several factors, of course, may account for the divergences: variations in per worker capital investments, perhaps due to concentration of different industries in the two sections; variations in productive efficiency of the workers, or of management, and so forth. But it is doubtful if all other factors can account for the striking differences in these figures unless considerable weight be given to the difference in the labor reserves available

⁴ Based in part on Heer, *op. cit.*, p. 30. Heer's figures are for 1927, including only ten states in the South; the figures given above for the printing industry were separately computed and are for the year 1925.

⁵ Ault, O. C., "The Industrial Outlook of the South," *Peabody Journal of Education*, Vol. 7, No. 6, p. 354, Nashville, Tenn., May, 1930.

for textile and other employment, and the consequent differences in bargaining power of the employee groups.

Further evidence of the relationship between the labor reserve and wages appears in the variations within the industries, and as between the states. Those jobs that are more skilled are paid higher wages, relative to the rest of the United States, than are the less skilled and more poorly paid jobs. Thus, the three highest-paid jobs in the cotton-goods industry in the South were paid 74.8 per cent, 72.5 per cent, and 66.3 per cent of the wages paid for similar work in the North; the three lowest-paid jobs received 76.2 per cent, 66.6 per cent, and 61.1 per cent. In the wood-working industry the highest-paid jobs received 89 per cent and 80.5 per cent of the wages paid elsewhere in the United States, and the lowest-paid jobs received only 55 per cent and 54.6 per cent. In the foundries and machine shops the highest-paid jobs received 94.3 per cent, 92.8 per cent, and 103.9 per cent; and the lowest-paid jobs received 57.2 per cent, 62.7 per cent, and 57 per cent of the wages paid for similar jobs elsewhere in the United States.⁶ The lowest-paid jobs were in only some of these cases occupied by Negro labor.

QUALITY OF LABOR AS AFFECTING WAGES

Similarly, those states that had the smaller agricultural or recent ex-agricultural labor reserves tended to have the lowest absolute wages and the lowest relative wages, both within any particular industry and in industry as a whole. The explanation seems to be that, for example, in a state like South Carolina, which has been largely agricultural in the past and thus has had a large reservoir of unskilled labor which might be tapped by industry, but which, on the other hand, was not

rich with natural resources that would require highly skilled labor for its exploitation, industries using unskilled labor have grown up, have paid wages slightly higher than the depreciating farm income, and have attracted a part of that labor reserve. The rest of the reserve remains as a force to maintain low wages until the laborers may become more skilled or more mobile territorially, or until the South Carolina industries are in a position to increase their demands upon the labor reserve.

Finally, in those skilled jobs where unionism has developed most strongly, absolute and relative wages have reached the highest levels. It is probable, of course, that unionism has been a cause as well as an effect of high wages; but it is probably more true that the factors that made for high wages in the first place, tended to make for unionism in the second place. In such industries as the building trades and the foundries and machine shops, where skill is a prerequisite, the agricultural labor reserve has been only indirectly effective; labor has been more skilled and probably more intelligent; its bargaining power was initially greater; and higher relative wages and unionism were both consequences of these "natural" conditions.

In any case, it appears that the presence of and flow from the low-income agricultural labor reserve is a chief causal factor of low wages in those industries that depend upon that quality of labor. A return of agricultural prosperity, therefore, would probably effect a reduction of the reserve of unskilled labor for manufacturing, and would bring the lowest-paid industries of the South into a wage alignment with the rest of the country equal to that which exists in the more highly skilled trades.⁷

⁷ Somewhat similar conclusions were reached by Professor Heer, *op. cit.*, p. 67.

⁶ See Heer's figures, *op. cit.*, pp. 37-40.

Women and Children in Southern Industry

By ELIZABETH L. OTEY, PH.D.

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THERE is no more drab picture than the employment of women in southern industry. The tragedy is not that so large a percentage of the female population is working for its living. Even the fact that one woman out of every three in South Carolina is employed—more than anywhere else in the United States—is not necessarily an evil. In the other Southern states, according to the last census, the percentages run from 17 in Tennessee to 21.9 in North Carolina, 25.8 in Alabama, 26.7 in Georgia, and up to 29.1 in Mississippi. The percentages are notably higher in the cotton-producing states with a large Negro population, where Negro women pick cotton.¹

An occupied adult population is desirable, provided it works under fair conditions, is not sweated, and is not sacrificing other values, as is too often the case with married women in industry. Further, the proportion of women in manufacturing, that branch of industry making greatest demands on physique, may not be too large in the South. In highly industrialized North Carolina, about 22 per cent of the women gainfully employed are in manufacturing—the same percentage as for the United States; in Tennessee 15 per cent, in Georgia and South Carolina 10 per cent, and in agricultural Mississippi and Alabama 3 and 6 per cent.

WOMEN IN THE COTTON MILLS

But the fact that the industry employing women is the textile industry,

¹ "Facts About Working Women," p. 10, *Bull. of the Women's Bureau*, No. 46.

which bespeaks low wages, long hours, and hard living, is the socially bad feature of their employment. A Federal inquiry into conditions of women's employment in 1922 showed that 60 per cent of the women investigated in Georgia, and 76 per cent in South Carolina, were in cotton mills.² In North Carolina, 49,000 out of 65,000 women in industry were employed in textiles.³ Such employment is not new. Before the Civil War, in the late forties, when William Gregg, of Graniteville, South Carolina, was urging the establishment of cotton mills in the South, one of his chief reasons for so doing was to give employment to the poor, hitherto idle, white women and children; and the cotton mill has been their haven ever since.

Curiously, with the growth of the industry, while the number of women has steadily increased, their percentage in relation to men has decreased, so that today, in this traditional woman's calling, more men are employed than women. In 1850 in the South, women constituted sixty-one per cent of the labor force, while at the present time they number about one third—a smaller proportion, incidentally, than in New England.⁴

The increase in the number of men in the southern industry has no doubt

² "Women in Georgia Industries" and "Women in South Carolina Industries," *United States Women's Bureau, Bulls. 22 and 32*.

³ Biennial Report of the North Carolina State Child Welfare Commission, 1928, Part 1, p. 142.

⁴ "The Cotton Textile Industry, 1910," *Report on Condition of Woman and Child Wage Earners in the United States*, Vol. 1, p. 31. Recent statistical abstract of the United States census.

been due to the fact that the new industry offered an opportunity to earn money wages in a land of few manufacturing opportunities for men. The technical perfection of automatic looms has also furthered their employment. The more looms they can tend, the higher the wage. They can operate more looms and do earn higher wages than formerly. Conversely, this has made the weaving operation, with many more looms to tend, a heavier task for women and has accordingly reduced their employment.

The work of women in the cotton mill is not heavy in the sense that it involves lifting. Frequently in hosiery mills, the loopers carry bundles weighing fifteen to thirty-five pounds;⁵ but in cotton mills, it is mainly tying up broken threads, removing lint, and supplying roving. The grinding, noisy monotony amid whirring machinery, in a temperature nearer 85 than 75 degrees,⁶ produces a strain, and, when continued for ten hours, brings fatigue and lowered vitality, leaving the victim susceptible to almost any ill.

One wonders, too, what must be the mental effect of working amid surroundings of four bare walls, rows of upright columns, rows of machines of steel separated by straight isles, sharp contrasts of light and shade, the absence of color, and no curves. It is not an atmosphere to develop imagery, a sense of beauty, or the inner life. A ten-hour day in a spinning or spooling room—worse still in the deafening weave room, with the odor of oil filling every cranny, and the floor permeated with grease which scrubbing does not remove—seems to the outsider to spell life at its worst, unless it be compared

with a ten-hour night or an eleven-hour night, as in some South Carolina yarn mills. The average full-time hours for women were about fifty-five a week in 1926—nearly fifty-seven in Georgia.⁷

EARNINGS AND LIVING STANDARDS

Nor are the earnings derived from working in the cotton mills high enough to offset the disadvantages. The average wages for a full-time week in 1926 in five Southern states—Alabama, Georgia, North Carolina, South Carolina, and Virginia—ranged from \$11.43 to \$14.46, and frequently the operatives do not work a full week. In four New England textile states—Massachusetts, New Hampshire, Rhode Island, and Maine—women receive from \$17.59 to \$20.90. Men's wages in the southern industry are from \$14.55 to \$18.33 a week; in New England, from \$22.05 to \$25.27.⁸

With yearly earnings of \$610 as in South Carolina in 1923, or of \$453 in Alabama or even \$800 in Georgia in 1920,⁹ which has since been considerably reduced, the scale of living must be low, for the woman worker does not have her earnings for her exclusive use. The cotton industry is a family industry. The worker lives at home and her earnings help to support other members of the family. In South Carolina, over fifty per cent of the women mill workers were married, widowed, or divorced, and were working to care for dependents.¹⁰

The homes, practically always owned by the mill company, are bare of furni-

⁷ "Wages and Hours of Labor in Cotton-Goods Manufacturing, 1910 to 1926," p. 8, *U. S. Dept. of Labor, Bureau of Labor Statistics*.

⁸ *Ibid.*, pp. 7-8.

⁹ "Women in Georgia Industries," "Women in South Carolina Industries," and "Women in Alabama Industries," *United States Women's Bureau, Bulls. 22, 32, and 34*.

¹⁰ "Women in South Carolina Industries," *Women's Bureau, Bull. 32*, p. 77.

⁵ "Negro Women in Industry," *United States Women's Bureau, Bull. 70*, p. 22.

⁶ "Conditions of Work in Spinning Room," *U. S. Dept. of Labor, Women's Bureau, Bull. 72*, p. 28.

ture. Possessions that go to make up the vaunted American standard of living—a sitting room, a rug on the floor, a bit of beauty in the home, are absent. Some observers have noted that mill people are better dressed than their homes would indicate—probably a national characteristic. The “best room” usually contains a bed and enlarged photographs of members of the family; if the family is prosperous, lace curtains adorn the windows and there is a graphophone. Dining rooms, if there are any, have the equipment reduced to a minimum—chairs and an oilcloth-covered table. As one passes through the modest frame house, furniture grows more scant until the upstairs bedrooms have only beds, and clothing hanging from pegs on the walls. Rarely does one find running water in the house. The faucet is outside, as is the surface privy.

HEALTH OF THE WORKERS

Among the poorer families, cheaper foods, starches, salt pork or fat meat, and greens constitute the diet, with baleful effects on health. Interesting studies of pellagra, the diet disease, have been made in southern mill towns, showing a relationship between the disease and a diet lacking in fresh meat, milk, and eggs.¹¹ The study did not show the diet of pellagrous households to be short in protein content, but lacking rather in “animal proteins.”

Since the days of Silas Marner, the weaver of Raveloe, cotton-mill workers are easily distinguishable in a miscellaneous group by their gaunt looks and sallow skins. Working ten hours a day in a temperature of 75 degrees with a relative humidity of 60 inevitably puts its stamp on them; and

as one might expect, respiratory diseases—pneumonia, bronchitis, and tuberculosis—take a higher toll among these workers than among others. The enormously higher death rate of women cotton operatives from tuberculosis compared with that of non-operative women is evidence.¹² Their higher death rate compared with that of male cotton operatives is no doubt due to the fact that there is little rest for the woman worker. On leaving the mill she returns home, exhausted, to take up fresh work, to cook, to clean, to drudge. As a result, women operatives lose more time from the mill through sickness, by two or three days, than men.¹³

Recently, the North Carolina State Child Welfare Commission, in making physical examinations of working children, confirmed the facts with regard to the proneness of cotton operatives to respiratory diseases. They found that fifteen per cent of the 446 boys and girls fourteen and fifteen years of age had had pneumonia, as compared with only three per cent of the boys in street trades.¹⁴

SOCIAL LIFE

Ten hours a day in the mill does not leave leisure for the gaieties and amenities, and if it did, social life in isolated mill communities, planted by modern business enterprise, affords little conducive to enjoyment. Church-going, listening to puritanic sermons of renunciation and the life hereafter, enlivened at intervals by revivals more or less rhapsodic, constitutes the diversion of the sober-minded. Of free,

¹² Perry, Arthur R., *Causes of Death Among Woman and Child Cotton Mill Operatives*, Vol. 14, pp. 31, 32.

¹¹ Goldsberger, Joseph, *et al.*, “A Study of the Relation of Diet to Pellagra Incidence in Seven Textile-Mill Communities of South Carolina in 1916,” *Public Health Reports*, Reprint 587, p. 62.

¹³ Wiehl and Sydenstricker, “Disabling Sickness in Cotton Mill Communities of South Carolina in 1917,” *Public Health Reports*, Reprint 929, p. 6.

¹⁴ *Ibid.*, pp. 158, 161.

exuberant expression, there is nothing. Recreation in the welfare institutions, where they exist, is managed by the salaried welfare worker. The workers themselves are listless and not interested.¹⁵ They have come to the mill to make money, to better their condition; they have no roots. It would indeed be amazing if, under such conditions, the workers manifested rotarian zeal to promote community life.

The company-owned mill community—company houses, company church, and often company store—providing nothing for the operatives but work, has served to intensify the social-inferiority neurosis which an aristocratic, slave-holding civilization had already implanted among those with neither slaves nor wealth, the helots of the old South. Used to little before they migrated to the mill, they have demanded less. It is not chance that the expression, "once in a cotton mill, always in a cotton mill," is so often heard from dull-eyed workers who accept the situation with dumb fatality. The more energetic spirits, when disillusionment comes, move from mill to mill, to find, as a woman who had run the gamut told me, "they ain't no difference, they is all cotton mills."

Clearly, if anything could interest cotton-mill workers, it would be a labor organization—something created by themselves. It is claimed that women as well as men join the union very readily—that an organizer is sure to secure members for the nonce, albeit the unions are short-lived.¹⁶ The stubborn opposition of employers and the absence of other industries in which to find employment are a formidable combination. However, the strikes at

Gastonia, Elizabethton, Marion, and Danville indicate that the workers are awaking. Women took and are taking an active part in these strikes.

LEGISLATION

In the absence of a strong labor movement, southern sentiment has not been aroused to the plight of its women workers. Consequently, laws for their protection have been slow in the making and just at present seem to be at a standstill. There is perhaps a historical reason for this. In 1907, a Federal investigation into the condition of woman and child wage earners showed 9,607 children fifteen years of age and under at work in the cotton mills of the South that were visited.¹⁷ This situation, grave and spectacular, demanded immediate legislative action, and put the major emphasis on child workers to the detriment of the women. There was little controversy about the iniquities of working children, although at the time voices were heard declaring the mill a healthy place for children, better than running wild on the streets, the inescapable alternative; but one might have one's doubts as to the wisdom of shortening hours for women, thus curtailing production and killing the goose that was laying the golden egg. In addition, the National Child Labor Committee, organized in 1904, took hold vigorously, and unremittingly pushed its legislative program for the protection of children through the state legislatures. Persons were lacking to fight the battles of working women.

REGULATIONS FOR WOMEN WORKERS

The maximum hours of work fixed by law in 1907 in cotton mills were

¹⁵ Macdonald, Lois, "The Mill Village," *Southern Mill Hills*, Chap. 2.

¹⁶ Mitchell, Broadus and George, "Cotton Mill Labor," *American Labor Dynamics*, pp. 210-211, quoted by Lois Macdonald, *op. cit.*, p. 34.

¹⁷ "The Cotton Textile Industry," *Report on Condition of Woman and Child Wage Earners in the United States*, Vol. 1, p. 86.

sixty a week in Virginia, South Carolina, and Alabama, and sixty-six in North Carolina and Georgia. Mississippi had no legal restriction.¹⁸ Today, after twenty-three years, the improvement has been slow. All the states except Alabama have regulated the hours women may work, but with no uniformity. A state may regulate the number of hours per week but not per day, or it may omit legislation about a lunch period, or one day's rest in seven, or night work.

North Carolina permits a sixty-hour week and an eleven-hour day in factories and manufacturing establishments, making exceptions for certain jobs filled by men, such as that of engineer, fireman, and so forth. South Carolina has a fifty-five-hour week and a ten-hour day for cotton and woolen mills, but permits overtime to make up lost time not in excess of ten days a year. Georgia has a sixty-hour week and a ten-hour day in the same industries, also permitting the making up of lost time. Virginia has a ten-hour day for most occupations, but no weekly limit. Tennessee permits fifty-seven hours a week and ten and a half hours a day; Mississippi sixty hours a week and ten a day; Texas sixty hours a week and ten a day in cotton manufacturing for women, but where they are employed more than nine hours, double pay is demanded for the extra hour, otherwise the law goes on record for a nine-hour day and a fifty-four-hour week. Not one of these states prohibits night work for women in manufacturing. South Carolina forbids work after ten P.M. in stores.¹⁹

Compared with the standards for the employment of women set by the

United States Government at the time of the World War, southern legislation is far behind.²⁰ The eight-hour day, half-holiday on Saturday, one day's rest in seven, at least thirty minutes for meals, a rest period of ten minutes in the middle of each working period, and prohibition of night work between midnight and six A.M., are nonexistent.

To be sure, these standards are ideal, and a better comparison would be with the legislation of other states. Ten states have eight-hour laws in many industries, and seventeen, including Texas, have nine-hour laws. The South falls in the ten-hour group. Twelve states, none Southern, where orthodoxy is to the fore, have limited the days a woman may work in succession to six. Thirteen states, none Southern, have provided by law a period of one-half to one hour for meals. Twelve states, including only one Southern state—Louisiana—have legislated that women may not work over five or six hours without a meal or rest period. Although sixteen states have in some way prohibited night work for women, we have seen that prohibitions are conspicuous by their absence, and minimum wage laws unheard of.²¹

REGULATIONS FOR CHILD WORKERS

Working children have fared better at the hands of the law.²² All Southern states forbid their entrance into manufacturing before fourteen years of age, but many weaken the law by exceptions, such as permitting work in stores. Virginia permits children twelve to fourteen years of age to work in canneries during the summer months. Legislation forbidding boys under six-

¹⁸ "Short Talks About Working Women," *Women's Bureau, Bull.* 59, p. 7.

¹⁹ "State Laws Affecting Working Women," *op. cit.*

²⁰ "The Legal Status of Child Labor as of October 1, 1929," *Children's Bureau, Dept. of Child Labor, Publication* 197.

¹⁸ "The Cotton Textile Industry," *Report on Condition of Woman and Child Wage Earners in the United States*, Vol. 1, p. 261.

¹⁹ "State Laws Affecting Working Women," *Women's Bureau Bull.* 63, *passim*.

teen years of age to work in mines is general in states with mines, and most of the states forbid the employment of minors sixteen to eighteen years of age in dangerous occupations, with the decision as to what constitutes a dangerous occupation left with the enforcing authority—in Alabama and Georgia the state board of health.

Characteristically, legislation about educational requirements of child workers is behind that of the rest of the country, for only within the past twenty-five years has the South passed compulsory school attendance laws. Georgia, North Carolina, South Carolina, Louisiana, and Texas require attendance up to fourteen years; Virginia to fifteen years; Alabama, Florida, and Tennessee are in the sixteen-year column; Mississippi is in the seventeen-year class, but exempts certain counties from the operation of the law—the only state in the Union making such exemptions.

Part-time continuation schools for children fourteen to sixteen years of age who are in industry, which many other states have instituted, are not to be found in the South. Tennessee has made a feeble gesture only, for the law which says the children must attend when the schools are set up does not require the establishment of the schools. Sixteen states in the country require the completion of the eighth grade before being permitted to work, but this requirement is nowhere found in the South. Alabama requires the completion of the seventh grade; Florida and Georgia, that the child be able to read and write; but the rest of the South makes no educational requirement.

The health of the child entering industry has been the subject of legislation in six Southern states: Alabama, Georgia, Louisiana, North Carolina, Tennessee, and Virginia. These observe the general practice of making it

mandatory that the child be examined by a physician as to physical fitness before working. Florida leaves it optional, and South Carolina, Mississippi, and Texas have no such provisions.

In this connection, some of the states—Alabama, Louisiana, and Tennessee—have legislated an eight-hour day and a forty-eight-hour week for children under sixteen years of age. Mississippi and Virginia have the eight-hour day, but a forty-four-hour week exempting canneries. North Carolina has an eight-hour day and a forty-eight-hour week only for those children fourteen to sixteen years of age who have not completed the fourth grade; for the others, an eleven-hour day and a sixty-hour week. South Carolina and Georgia have the same working hours for children as for adults—a ten-hour day and a fifty-five and sixty-hour week respectively. Night work is prohibited for children throughout the South in factories, South Carolina only permitting children to work until nine P.M. to make up time lost on account of accident to machinery. South Carolina, Georgia, and Florida allow night work in stores.

CONTROL OF CHILD LABOR

There is some form of factory inspection in all the Southern states, so that the administrative machinery for enforcement of the law is present. All states save Mississippi require that permits to work be issued by school authorities or by a state official. Alabama, Georgia, Louisiana, and Virginia go farther, requiring the state to issue forms for employment certificates and directing local officials to send duplicates of issued certificates to the state central agency. In this way a better control over child workers is insured.

Other aspects of child labor—street trades, workmen's compensation, and

so forth, are not uniformly regulated in the South. Virginia, North Carolina, and Alabama require a badge or permit for newsboys twelve to fourteen years of age, but elsewhere there is no restriction, even in the populous city of Atlanta. Workmen's compensation laws make no special provisions for injured minors, such as computing their probable future earnings in making compensation. Florida, Mississippi, and South Carolina have no compensation acts at all. Illegally employed minors in Alabama, Georgia, North Carolina, and Virginia receive compensation on the same basis as the legally employed. Tennessee and Texas, however, make them ineligible to compensation.

In view of the large number of minors over sixteen years of age carrying the burdens of industry, many states have legislated shorter hours for them; but apart from forbidding morally hazardous occupations, such as messenger service at night, street trades for girls, and employment in billiard rooms, the Southern states have done little to safeguard this group. Only two states have required employment certificates for children of sixteen years. The general assumption is that they are sixteen years old when they say they are. Alabama's child welfare department requires an age certificate for children of sixteen years except in agriculture and domestic service. Georgia requires a certificate for minors sixteen

to eighteen years of age for night work and in certain occupations.

THE OUTLOOK

The irony of this bit of twentieth-century industrial civilization tempts one to speculate on the inability of mankind to know what kind of a society it wants. The facts are that industrialism, because it came to the South much later than elsewhere in the United States, has been in a position to profit by experience both in England and in New England. Instead, each progressive step has been unnecessarily slow, often balked. There is no clarity as to the ends to be sought, or why.

Southern tradition of chivalry, which might be expected to translate itself in modern industrial society into solicitude for the underdogs of the industrial process, has been thrown into the discard. That pleasing illusion is gone. The church, a field in which man's mind may range as to the social order, emphasizes the future, and, in so doing, dulls wits to the import of the present. Probably, too, the fear concept of religion has, unconsciously, a crippling effect on the mind in appraising society. Education, in the South as everywhere, is not provocative of a free outlook. All of these factors are failing to assist in the solution of this industrial problem. Development shackled by the determinism of the old slave order is slow.

Negroes in Southern Industry

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ATTITUDES and traditions should be given first place in appraising any racial relation in the South. Not even a prosaic subject like industry can escape their predication. Facts and figures tell only a part of the story; for underneath the obvious, or the apparently obvious, are causal beliefs and habits that are as determining as economic factors.

But one should be careful of generalizations when writing about the South. The word should no longer be construed as meaning a set of inflexible dogmas governing and motivating all who live below the Mason and Dixon line. Many who live there still cling to age-old belief, but not all. Some hate Negroes and lynch them; but others protest, and occasionally a sheriff arrests, a jury convicts, and a judge sentences the guilty. Some shun laborious and menial work, leaving this to Negroes; but unemployment, respecting neither race in recent years, has removed this vestige of superiority.

ECONOMIC RETARDATION OF THE NEGRO

Yet we venture this most provocative generalization, that the Negro is still a slave—not legally so, but by a more effective control than law, namely, the fixity of his status by habit, tradition, and ignorance, which render him powerless to advance beyond the fringe of economic independence. Held down to the level of mere subsistence, his wages are the smallest, his hours the longest, and his conditions of work the poorest. Except for foreign-born white men, the proportion of Negroes at work was greater than that of any other race

group, according to the Census of 1920. Almost 40 per cent of the Negro women worked, as compared with a little over 17 per cent of native-born white women, a little more than 18 per cent foreign-born white women, and about 25 per cent native-born of foreign parents. The vast majority who work on the farms are in virtual serfdom. Those who work in manufacturing can have but little hope, under existing conditions, of attaining recognized standards for workers. The system extends even to teachers, who are paid smaller salaries than are white teachers. Tulsa is one of the very few cities of the South that pay Negro and white teachers the same wage.¹

Even here, as we shall show, this general statement has its exceptions in Negroes who have moved forward in all sections of the South despite the occupational bondage that retards the majority of the race. Further, there are manifestations of industrial abolitionists, who, though few in number, seek to remove colored workers from the prevailing industrial yoke that has too long kept them down. New educational efforts, diversified to meet the needs of a specialized civilization, are today recognized as necessary to lead Negroes out of blind-alley jobs. "The economic salvation of the Negro," in the opinion of the Federal Bureau of Education, "is dependent to a great degree upon his training in the fields of agriculture, mechanic arts and crafts."²

¹ Thomas, Jesse O., "American Cities—Tulsa," *Opportunity Magazine*, Feb., 1929.

² "Survey of Negro Colleges and Universities," *U. S. Dept. of the Interior, Bureau of Education, Bull. 7, Chap. 1, 1928.*

When asked to intercede on behalf of the welfare of Negroes, a prominent governmental official replied that the Negro is not an industrial, but an agricultural, worker. While this point of view, shared by many, is not erroneous, it certainly is not exact. Traditionally, Negroes are an agrarian people. Their first association with this country was on the farm, to which by means of slavery, peonage, and an enforced poverty they have been held more or less closely ever since. Four states (Maryland, Virginia, and North and South Carolina) were once the home of more than eighty per cent of the country's entire Negro population. Tobacco was then the South's chief agricultural output, and Negroes were used almost exclusively in growing it. Then came the development of the cotton fields in the Southwest, when Negro labor, the one sure and plentiful supply, was put to work sowing and harvesting cotton, which until recently was the South's chief source of wealth and the country's principal export.

It is true that the larger number of Negroes are still in agriculture, especially in the South. Practically all of the 2,177,888 Negroes engaged in agriculture in 1920 lived in the Southern states, and they comprised a majority of the total employed Negroes there. For the entire country, Negroes were 11.7 per cent of the total workers, but 20 per cent of the agricultural workers.

But farming in the South has grown less attractive for Negroes, as for others, and as a consequence the rural population of Negroes has decreased in recent years, concurrently with an urban increase. In 1890, 87.4 per cent of the Negro population in the South lived in the rural districts. The rate of increase during the next decade was 14.5 per cent; from 1900 to 1910, only

5.1 per cent; and from 1910 to 1920 there was an actual decrease of 3.4 per cent.³ As a result, 6,661,262,—only 74.7 per cent of the South's Negroes, were rural in 1920.

VARIOUS OCCUPATIONS FOR NEGROES

Tradition also seeks to confine Negroes to domestic service. Although the number engaged in this work had decreased slightly throughout the country at the last census, Negroes still comprised about half of all the persons engaged in domestic and personal service in the United States. The number of Negro woman domestics decreased sharply in the Southern states, but there was an increase in the South among Negro males so classified, amounting to nearly eight thousand. (See Table II.) Thus, many of the Negro men who left the farm for the city have been absorbed not into industry but into the increased number of domestic servants that follows urban development. Negro women have apparently found no substitute occupation, for the total number employed decreased from 1,799,447 in 1910 to 1,303,640 in 1920 in the Southern states.

During his slave-farmer and house-servant career, however, and even before, the Negro made his entrance into the trades and industry as a sort of avocation. Many skilled mechanics developed in this way; some of them were hired out or sold by their masters because of their superior craftsmanship. Records of nonagricultural workers go back some distance before the Civil War. Charles H. Wesley lists the occupations of 700 of the 1,579 Negro males of Charleston, South Carolina, in 1850. Among these were 122 carpenters, 18 bricklayers, 45 draymen, 87 tailors, 14

³ Reuter, E. B., *The American Race Problem*, p. 49.

wheelwrights, and 91 laborers.⁴ Small towns gave opportunities to lumbermen and turpentine workers. Thirty years ago, forty-six per cent of the gainfully employed Negroes were in nonagricultural pursuits. There were 275,000 in mechanical and manufacturing pursuits, 209,000 in trade and transportation, and 1,325,000 in domestic and personal service.⁵ By 1920, fifty-five per cent were in non-agricultural employment, of whom twenty per cent, or almost one million, were in manufacturing and mechanical occupations, and more than a half-million, or eleven per cent, in trades and transportation.

NEGRO PARTICIPATION IN INDUSTRIAL EXPANSION

This increase of one and one-half million Negroes in industry, the trades, and transportation during the past decade is a record of progress notwithstanding the age-old customs and traditions which still confine them rigidly to a few jobs above the level of ordinary labor. To be sure, the new opportunities in the North have been more decisive, but the South has moved forward, too.

Since the beginning of the century, industrial development has resulted in a labyrinth of new industrial enterprises dotting the South from one end to the other. As Table I⁶ shows, from 1899 to 1925, the three divisions of Southern states each showed a percentage increase in total workers in manufacturing, that pushed ahead of New England's 32 per cent, the Middle Atlantic's 55 per cent, and the West North Central's 72 per cent. Southern

states, with Oklahoma leading, show percentile gains up to 1,021. It is said that

since 1919 the expansion of the new industrial South has been the dominant feature of the growth for the country as a whole. Part of these changes reflect little more than general economic development of the section in question. Part, however, evidence a virtual shifting of manufacturing enterprise into new sections. This is particularly true of the East North Central states and of the new industrial South. It will be interesting to follow the further course of these new developments. They seem at this time to foreshadow the relative decrease in importance of the older manufacturing sections of the country, and the rapid approach to industrial maturity of sections which only recently were not seriously regarded in the affairs of manufacturing enterprise in this country.⁷

Numerically, the greatest increases in industrial workers appear in order as follows: North Carolina, 109,912; Texas, 68,188; Tennessee, 61,682; Georgia, 57,837; South Carolina, 53,119; Virginia, 45,912. In all these but Texas, Negroes in 1920 comprised from one fourth to one third of the total males engaged in manufacturing and mechanical occupations. Thus, in practically every Southern state in which the lot of white industrial workers has improved, the lot of Negro workers has also improved.

DISTRIBUTION OF NEGRO WORKERS

Of the distribution of Negro workers in industry, so much has been written that it is scarcely necessary to comment here upon the numbers in each occupation for the entire United States.⁸ For the sake of comparison

⁴ Wesley, Charles H., *Negro Labor in the U. S.*, p. 43.

⁵ Census figures of 1900.

⁶ Compiled from "The Growth of Manufactures 1899 to 1923 and Appendix 1923-1925," *U. S. Bureau of Census, Monograph VIII*, Tables 35 and 44.

⁷ *U. S. Bureau of the Census, Monograph VIII*, p. 86.

⁸ For a much more detailed discussion of these industries, see Johnson, Charles S., *The Negro in American Civilization*, Chaps. III to VIII.

TABLE I—AVERAGE NUMBER OF WAGE EARNERS EMPLOYED IN MANUFACTURES IN SOUTHERN STATES COMPARED WITH THE TOTAL FOR UNITED STATES AND OTHER GEOGRAPHIC DIVISIONS BY CENSUS YEARS AND PER CENT OF INCREASE BY CENSUS PERIODS, 1899-1925

Division and State	Average Number of Wage Earners		Per Cent Increase During 26-Year Period 1899-1925	Per Cent Increase or Decrease (-)* 1923-1925 Over Previous Period	Per Cent Increase 1921-1923 Over Previous Period
	1925	1899			
United States.....	8,384,261	4,712,763	79.9	- 4.5	26.4
South Atlantic:	838,834	458,344	84.9	.8	28.8
Delaware.....	20,704	20,562	1.1	-10.4	30.2
Maryland.....	125,787	94,170	34.4	- 2.4	20.3
District of Columbia...	9,753	6,155	59.1	- .7	13.7
Virginia.....	112,135	66,223	72.1	.5	26.0
West Virginia.....	80,700	33,080	145.7	- 5.8	41.5
North Carolina.....	182,234	72,322	155.3	4.9	27.9
South Carolina.....	100,144	47,025	114.6	3.5	27.0
Georgia.....	141,173	83,336	71.5	2.7	39.9
Florida.....	66,204	35,471	88.0	1.8	22.1
East South Central:	355,995	177,208	103.6	2.5	33.9
Kentucky.....	76,580	51,735	50.5	- .2	30.4
Tennessee.....	107,645	45,963	137.5	1.1	41.2
Alabama.....	116,599	52,711	123.6	6.4	32.5
Mississippi.....	55,171	26,799	109.0	1.5	28.7
West South Central:	265,160	113,388	136.3	- .7	16.4
Arkansas.....	43,977	31,525	42.2	- 1.3	33.2
Louisiana.....	88,058	40,878	116.6	- 7.0	11.2
Oklahoma.....	26,333	2,381	1,021.4	3.3	14.6
Texas.....	106,792	38,604	179.3	4.3	15.4
New England.....	1,122,216	851,903	32.0	-10.5	17.1
Middle Atlantic.....	2,491,039	1,604,844	55.7	- 7.5	19.9
East North Central.....	2,342,799	1,073,322	119.1	- 1.9	39.5
West North Central.....	452,820	266,051	72.0	- 3.6	22.1
Mountain.....	100,374	44,497	128.5	- 5.4	29.3
Pacific.....	415,024	123,206	238.7	- 1.3	33.1

* Only 5 states except those in the 3 Southern divisions show an increase in this period, the highest being Michigan and Colorado, 2.4% each.

they are given in Table II,⁹ with the predominating occupations in the Southern states and the changes to be noted during the decade 1910 to 1920.

It is clear that practically all Negroes engaged in saw and planing mills in the United States are in the South. These

⁹ Compiled for this article, from *U. S. Bureau of the Census*, Vol. IV, "Occupations, 1910 and 1920."

mills use Negroes almost exclusively, and still employ a greater number of Negro men in the South than does any other one industry, although the 98,374 of 1920 represent no great change since 1910. For the most part these workers are accounted for in the rural population of Louisiana, Mississippi, Alabama, Arkansas, and Florida, in the order named, and have not been a fac-

TABLE II—GAINFULLY EMPLOYED NEGRO MALES TEN YEARS OF AGE AND OVER IN THE ENTIRE UNITED STATES AND IN THE SOUTH, BY MAIN OCCUPATIONAL CLASSIFICATIONS AND CHIEF SPECIFIC SOUTHERN OCCUPATIONS, WITH INCREASES AND DECREASES, 1910 to 1920

Occupational Classifications	Number of Negro Males Employed					
	Total in United States			Total in South*		
	1910	1920	Per Cent Increase or Decrease	1910	1920	Per Cent Increase or Decrease
Total all occupations	3,637,386	3,252,862	— 10.6	2,744,194	2,612,296	— 4.8
Agriculture	1,842,238	1,566,627	— 15.0	1,784,408	1,526,670	— 14.4
Extraction of minerals	61,048	72,892	+ 19.4	34,932	41,684	+ 19.3
Mechanical and manufacturing	563,410	781,827	+ 38.8	365,528	522,045	+ 42.8
Skilled workers, building trades†	61,897	66,993	+ 8.2	48,919	49,405	+ 1.0
Machinists, millwrights and toolmakers	3,322	10,286	+209.6	1,987	4,691	+136.1
Iron molders, founders and casters, furnacemen, smelters and heaters	5,359	9,545	+ 78.1	2,480	2,276	— 8.2
Iron and steel workers, semiskilled	5,983	22,916	+283.0	1,402	11,859	+745.8
Iron and steel workers, laborers	31,112	104,518	+235.9	12,414	43,698	+252.0
Saw and planing mill, semiskilled	9,162	6,048	+ 34.0	9,039	5,775	— 36.1
Saw and planing mill, laborers	89,954	94,039	+ 4.5	89,756	92,599	+ 3.2
Tobacco factories, all workers†	13,807	19,354	+ 40.2	12,458	17,488	+ 40.4
Cotton mills, all workers§	5,304	12,732	+140.0	4,678	10,744	+129.7
Semiskilled workers in other specified industries|| . . . . .	20,886	45,512	+117.9	2,802	24,883	+788.0
Laborers in other specified industries||, ** . . . . .	100,837	173,541	+ 72.1	33,642	118,322	+251.7
Building, general and not specified laborers**	151,494	127,860	— 15.6	104,432	84,211	— 19.4
Transportation	254,683	308,896	+ 21.3	182,078	221,724	+ 21.8
Steam Railway laborers and semiskilled	88,340	98,303	+ 11.3	75,936	74,759	— 1.6
Trade	112,464	129,309	+ 15.0	74,045	86,127	+ 16.3
Public service	22,033	49,586	+125.1	13,071	29,787	+127.9
Professional	37,600	41,056	+ 9.2	23,819	28,170	+ 18.3
Domestic service§§	268,874	273,959	+ 1.9	132,982	140,761	+ 5.9
Clerical	16,024	28,710	+ 79.2	8,697	15,328	+ 7.2

* Includes the following: Alabama, Arkansas, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

† Includes the following: brick and stone masons, carpenters, electricians, painters, etc. (building), paper hangers, plasterers, cement finishers, and plumbers. In the South, there was noticeable decrease in brick and stone masons; increases in plasterers, cement finishers, and plumbers; with but

tor in the urban movement. Many of those in the next largest single occupation—railroad construction—and in mining are also rural.

As for the newer industries, the great attractions in the North have been the packing houses, the automobile factories, and other iron and steel industries. In the South, the first two are practically nonexistent. Iron and steel employ smaller numbers of Negroes in the South, but the rate of increase has been greater than elsewhere. This is most marked among semiskilled workers. Not yet, apparently, have the skilled occupations opened to the Negro in the South as they have in the North. Workers in this industry are found in every Southern state, but chiefly in Alabama, with large numbers also in Virginia, Maryland, Tennessee, and Georgia.

Negroes in tobacco and cotton do not bulk large in the country as a whole, but, save for the building trades, these are next most important in the South, and North Carolina leads in both. The introduction of machinery has brought about rapid expansion and change in processes in the tobacco industry, changing the proportion of men to women, semiskilled to unskilled, and Negro to white, with results not particularly favorable for the advancement of Negro men.

In cotton mills, although at least one fourth of the unskilled men employed in 1920 were Negroes, it is hard to say whether many of these, or of the women so classified, were engaged in factory processes, or as sweepers, porters, and so forth.

Whatever gains Negroes have made in the building trades during the decade have not been chiefly in the South. Composite figures tell little of the story here, for in every state and city throughout the land, different situations exist, with a wide variety of closing and opening opportunities.

The entrance of the Negro into the new and diversified miscellaneous industries of the South, in both semiskilled and laboring jobs, and in unmistakable numbers, is the most promising feature of his present situation. He has not been caught napping this time, as he was when the doors of the cotton mills opened.

NEGRO WOMEN IN INDUSTRY

The number of Negro woman workers increased in all but agriculture and domestic and personal service. There were 37,016 more in 1920 than in 1910 engaged in manufacturing and mechanical pursuits, the proportion doubling during the ten-year period.

This is in vivid contrast to the increase of only one-tenth of one per cent in all women

slight changes in the other trades. The largest group, carpenters, totalled 28,791 in 1920. Here, gains by over 2,000 in Virginia, North Carolina, South Carolina, Georgia, and Texas were offset by losses in other states, resulting in a net gain of only 1,303.

‡ In the South, in 1910 over half (7,115) of the workers were semiskilled, but in 1920 the semiskilled had decreased to 5,246.

§ In the South, the greatest increase was among the laborers—from 3,900 in 1910 to 9,543 in 1920.

¶ In the South, this great increase is accounted for by no one industry, but by large numbers in every state in new miscellaneous industries, unspecified by the census.

¶ In the South, large numbers of these are in brick, tile, and terra cotta factories, fertilizer and other chemical factories, tanneries, turpentine distilleries, helpers in building and hand trades, and (especially in 1920) in food industries and other diversified manufacturing.

** Instead of the apparent increases and decreases in these two groups, at least part of the change is due to more specific classifications used in the 1920 census, although undoubtedly there was some actual decrease in building laborers.

§§ Gains of nearly 8,000 among railroad porters and over 16,000 among janitors and sextons counteract losses in some other lines.

so engaged, and shows a very striking change in the status of Negro women during the decade. At the earlier census, of every 20 Negro women, between 10 and 11 were in agriculture, between 8 and 9 were in domestic and personal service, and 1 was in other lines of work; 10 years later, of every 20 Negro women, between 7 and 8 were in agriculture, 10 were in domestic and personal service, and between 2 and 3 were in other work.¹⁰

Of the 104,983 Negro women whose occupations in 1920 were classed as mechanical and manufacturing, 70,827 were in the Southern states. This represented an increase of 24,958 over 1910. A great number of these, however, were working as "dressmakers not in factories," and only a very small proportion were actually employed in factories at any kind of occupation. The tobacco industry is the only one where Negro women are an important factor, 11,595 semiskilled and 5,160 laborers being reported, chiefly in North Carolina, Virginia, and Kentucky. Four states each employ from five hundred to one thousand Negro women in cotton and textile mills—a marked increase over 1910. Negro women are also found in a few scattered industries, such as fish packing in Maryland, garment factories in Baltimore, furniture factories, and in the Government Bureau of Printing and Engraving in Washington.

THE URBAN TREND

The changing trend from agriculture to industry has shown no abatement since 1920. Between 1920 and 1925 the "colored" farm population of the United States declined from 5,300,615 to 4,505,796, or fifteen per cent.¹¹

¹⁰ "Negro Women in Industry in 15 States," *U. S. Dept. of Labor, Women's Bureau, Bull. 70*, pp. 1-2.

¹¹ Fry, Charles Luther, *The Annals*, Nov., 1923, p. 34.

More recent shifts are recorded by T. J. Woofter, Jr., who estimates that "the southern rural population decreased by about 240,000 Negroes between 1920 and 1930."¹² Estimating a growth of 800,000 in the Negro rural population of the South, due to excess of births over deaths, Mr. Woofter believes that "over a million Negroes moved in this ten-year period from the southern rural districts." Today it is safe to estimate that there are more than four million Negroes living in cities North and South. Birmingham, Atlanta, Nashville, Charleston, Savannah, Memphis, New Orleans, and other large Southern cities have up to forty-seven per cent of their population colored.

This tremendous cityward movement overran urban centers with both black and white workers, many of whom found themselves unemployed when the period 1923-1925 depressed the entire country. During these two years, as has been shown in Table I, almost every state in the Union employed fewer workers in manufacturing than in the previous two-year period. Since 1925 the country has had only brief periods of business prosperity. The present crisis of unemployment is a culmination of constant downward trends for the better part of two years.

Within the past few years the South has been overrun with workers. The pressure of agricultural laborers on the jobs of the city workers has produced a problem for industry and has greatly harassed Negro workers. As a result of this oversupply of workers, white and colored vie with each other for positions which until lately had been conceded the possession of Negroes. The contest has in many instances been won by whites to whom making a living

¹² *A Study of the Economic Status of the Negro*, unpublished, June, 1930.

was more important than accepting employment in lines of work once thought beneath the dignity of their race.

LABOR UNION ATTITUDE TOWARD NEGROES

The labor union movement has always been opportunistic in its treatment of Negroes. The American Federation of Labor's policies with reference to Negro workers are frequently at variance with the practices of its component national and international bodies; and these may also vary from the practices of their locals. The Federation has some thirty thousand local organizations and about as many ways of handling the Negro's participation in the trade-union movement. There are 6,500 locomotive firemen among Negroes, most of whom are in the South. These cannot join the Four Brotherhood of Trainmen because Negroes are not permitted to join any branch of their organization.

The Negro has not been entirely excluded from membership in the Southern locals of the American Federation of Labor. A number of locals of building tradesmen, especially the brickmasons' and plasterers', have colored members—sometimes in separate locals and sometimes in locals with white workers. In some cities, notably Charleston, South Carolina, the Negroes have been the backbone of the union movement. The recent organization of the American Federation of Labor in the South has revealed no attempt to heal the breach between the labor element and Negro workers. Ira DeA. Reid has written exhaustively on the subject, listing the unions that do not offer Negroes affiliation, and giving specific instances of the relations in the South.¹³

¹³ *Negro Membership in American Labor Unions*, pp. 154-165.

ECONOMIC INTERRACIAL CONFLICT

Thus, today the Negro finds himself again in jobs that white men want. The previous struggle was just after the Civil War, when Negroes were the artisans, the barbers, and the building contractors. There is talk today, as there was then, of laws to restrict the labor of colored men. There are organizations today, as there were then, with the avowed purpose of removing Negroes from their jobs.¹⁴ Consequently, the South has a new problem in race relations.

Heretofore, books, pamphlets, and organizations have emphasized the promotion of understanding which would bring white and colored people to live in the South without friction. Our educational efforts did not comprehend the work problems of Negroes. In 1912 when the first Southern Sociological Congress was held in Nashville, the economic status of Negroes was not a question to be considered. Their health, crime, and education were uppermost. In fact, interracial groups can hardly be said greatly to have concerned themselves yet with this phase of the "Negro problem." There are commendable beginnings, and expressions are emanating from some quarters which indicate that at last some thought is to be given to this basic question in Negro life. The report of Negroes in Richmond, Virginia, is a commendable step forward.

From all the evidence before it, the committee is of the opinion that the inferior economic status of Richmond Negroes, involving as it does the irregular employment and low wages of men; the employment outside the home and long hours of work of mothers of small children; and poor

¹⁴ The extent to which jobs heretofore regarded as "Negro jobs" are now being filled by whites is indicated by Hill, T. Arnold, *Opportunity Magazine*, May, 1929.

opportunity for economic advancement generally, is the outstanding and most pressing social problem of Richmond Negroes, and is directly related to almost every other social problem of the group, including bad health, low age at death, poor housing conditions, dependency and nursery problems of Negro children, and so on. The committee believes that higher wages, greater regularity of employment, and the opening to Negroes of more positions requiring increased education and skill are necessary to an improved economic condition of the group.¹⁵

Commenting upon the activities of the Black Shirt group, the *Macon* [Georgia] *Telegraph* comes to the rescue of the Negro in this fashion:

The Black Shirts . . . want to run all Negroes out of their jobs and give these to white people. Here we have been thinking all these centuries that if we could only get the Negro to go to work, to hold his job, all would be well with the white man. Now that the Negro has gone to work, up jumps an Order to make him quit! We don't think the thing is going to be popular for very long. For if the Negro doesn't work and make his living the white man must work and make it for him. A fine program the Black Shirts have mapped out!

VOCATIONAL TRAINING AND UTILIZATION

The Southern Interracial Commission is coöperating with the Rosenwald Fund, which is establishing vocational schools, with the idea that the South needs more trained Negro workers. These beginnings, hopeful and basic as they are, have been built mostly around the promotion of educational opportunities for Negroes to learn trades. A further step must, of course, be the utilization of these workers when trained. We cannot predict what may happen in this country North or South as a result of our failure to handle employment problems

¹⁵ *The Negro in Richmond, Virginia*—The Report of the Negro Welfare Survey Committee.

properly and of our use of machines, which has displaced so many human hands. But in any event, encouragement for the Negro to continue to study will come only when he finds an outlet for his capacity. There is a big gap between even our limited facilities for training and our facilities for finding work for the trained. There is a field for interracial coöperation in business enterprises, with all or part white capital, in order to provide practical business training as well as varied outlets for the capacity of ambitious Negro youth.

This responsibility is the South's more than the North's, because, notwithstanding the migration of a million and one-half workers from the South in the past fifteen years, eighty-five per cent of the Negro population of this country still lives in that area. The big job facing interracial groups is that of harmonizing racial understanding to the point where it will permit the employment of Negroes in lines that comport with their fitness. Until this is done, their death rate will still be high, their crime ratio will continue to be too great, and whatever civic contribution they might make will fall short of reasonably possible realization.

INTENSIFIED STRUGGLE IS IMPENDING

What of the future of this race in southern industry? Will Negroes return to agriculture? Will they be able to reclaim the trades and crafts which they are being forced to abandon to whites? Can they secure a surer foothold in southern factories? Will they migrate to the North? Can the rapidly growing Pacific coast, to which many have gone in the past few years, absorb enough of them to relieve the tension? None of these things will happen to any great extent. They will not be allowed to monopolize the

crafts or the factory jobs, although their numbers can grow in them. The North is no longer bidding for Negro labor, and the social problems that have resulted there from overcrowding in large cities are objected to by both whites and Negroes. The cotton fields of California are at present welcoming Negroes, but the cities could easily reach the saturation point. Others will go back to the farms, as some have already done, but the transition will not be permanent unless farm conditions improve.

If we are correct in contending that the presence of large numbers of unemployed whites and Negroes, encouraged to leave the farms for industrial centers and juxtaposed in our large Southern cities, has been the chief cause of the present-day competition between the two groups, obviously the solution of the difficulty is in more employment or fewer workers. It is a safe prophecy that the South has by no means reached its maximum industrial productivity. More factories are yet to take advantage of cheap labor, great deposits of natural resources, and inexpensive transportation. Out of the wave of depression through which we are passing, the South will emerge ready and willing to throw its full human and natural resources into the resuscitation of the Nation. This will incite fresh streams cityward. Negroes and whites will be in the caravan of eager workers who will keep up the struggle for economic advantage.

The more trouble ensues, the sooner will the struggle be over, because there is a limit to the tolerance capital will maintain when its earnings are disturbed. A dollar is closer than blood to the American business man. He has had no occasion to make an issue of this question as yet, for in no place has it got out of hand. Should it become

serious, capital will have a word to say. The Black Shirts have not found business interests agreeable to their scheme of economic disfranchisement of the Negro. To have to care for Negroes as subjects of charity is more expensive than to permit them to work, especially when their wages are small.

HIGHER IDEALISM NEEDED

Moreover, new ideals are gradually working their way into the labor movement. The old order of life-and-death struggle between working men is giving way to coöperation. The South will doubtless be the proving ground for these newer ideals, as we shall have to fight out many other developments on her soil in a not-too-distant future. Infuse men and women with the idealism of higher living and better working standards, which are jeopardized as long as the races compete in wages, hours, and working conditions, and they will have something besides race differences to occupy their time. This is not a Utopian dream—no more so than the dream of white and colored students assembling in the South to talk over intellectual aspects of the race question, which dream has come true.

For this, of course, a leader will have to arise, just as the crusade for Negro education, which is still not divested of its imperfections, has had valiant leaders who had to blaze a trail that seemed as hopeless as this. Adequate public education is as yet unrealized, but there are influences constantly working toward this end. Industrial coöperation between the races should move forward faster. Poor whites have objected to educating the Negroes, because they visualized equality as being the ultimate result of Negro education. Thus education tended to separate races and retard racial understanding. In the case of industry, we

begin with working people of both races, on the level of interests that their long and unsatisfactory common experiences have taught them should be improved.

I am not forgetting my criticism that white men have neglected this phase of Negro life, but I am also aware that never before was there the occasion for their interest in this phase of the Negro question that there is today. Their efforts in other directions will be wasted and their money spent in Negro education will pay diminishing returns if the strife between white and black workers is allowed to keep its heat.

There is too much danger, also, from discontent born of capacity denied a chance to make its way. With university and graduate schools in the heart of the South turning out college students throughout the land, the interracial forces of the country will have another problem to compel their attention. Communism harks back to discontent, and discontent smoldering in alert minds is vitalized into action. Atlanta, New Orleans, and Nashville will have to find mental and manual occupations for their high school and college graduates at the rate at which they are developing them.

NEGROES MUST BE MORE EFFICIENT

The Negro is not in a position to determine his course in industry, but he can do much to prepare for the inevitable direction it will take. He must not leave all to economic and humanitarian forces. He cannot move against the tide of economic inevitability, but he can move with it. He has been nearly as indifferent to his future in employment as have been his white friends. He has been content with jobs instead of careers. His vision, of course, was obscured by the barriers raised against his entrance into new

fields; but within the limited fields permitted him, opportunities for business development have been taken over by others because he neglected to foster them. There is hope that the beginnings of vocational consciousness which are seeping through to the South from the North will start a much delayed awakening.

Only with the coöperation of Negroes who will take advantage of the opportunities offered, can vocational high schools, recommended for a number of cities in the South and already in operation in others, meet with the success they deserve. Guidance in both education and vocation is the paramount need among students, although many of them think the furthering of vocational guidance is necessarily opposed to the advancement of professional training. The first step toward recovery of lost ground in occupations or entrance into new fields is the awareness of the need for vocational-mindedness. A shift in emphasis from complaint about lack of employment opportunities to the practices which the Negro should impose upon himself will disclose his weaknesses and needs. It will open up to him the network of economic factors conditioning the objectives to which he aspires in all walks of life.

The encouraging record of Negroes in manufacturing presages the overthrow of ancient belief respecting their inability to perform skilled labor. Despite the limitations against them in industry, employers North and South have found colored men and women satisfactory workers. As stated by Irene J. Graham during the discussion of Negro labor at a recent conference of the National Urban League:

The Negro worker today, therefore, must face squarely certain hard facts. In the modern world of industry one thing only wins out—efficiency. He must prove him-

self not only as good as, but superior to, his white competitor, not only in order to secure new opportunities, but even to keep those he has heretofore held unquestioned. He must take advantage of every opportunity offered for training in every line for which there is a demand in industry, and

where no such training is offered, he must clamor for it.

This sentiment is beginning to take root among colored youth as they critically take stock of their assets and liabilities for success.

Organization of Labor in the South

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INDUSTRIALISM has everywhere drawn in its train organized social adjustment. Probably Japan is the only country except the South where this adjustment has failed to follow democratic lines. There has been plenty of organization in the South, but it has been organization from above, in the case of the cotton mills functioning through the mill villages. The disturbances of last year were the first public signal of revolt on the part of the southern white workingman against autocratic control. It is as an entering wedge of democracy in a hitherto authoritarian society that these strikes have meaning.

It would not be surprising to find that the argument which most appealed to the mill operatives was not the possible economic gain of combination, but the opportunity to assert their strength as a people against industrial and social dominance. The argument of gain was powerful enough. Wages are lower and hours longer than elsewhere in the country. Responsibilities and tasks were being increased without satisfactory additions to earnings. But though some of the smaller strikes were on points of wages and conditions, the important conflicts centered around union recognition. The union was the symbol of a hoped-for transfer of power to the operatives; it was for that ideal that the patience, the hardship, the danger, and the passion of the strikes was endured.

ORGANIZATION IN SOUTH DELAYED

The upheaval came tardily. A few people were aware of the heights which agitation had reached just after the

war, and prophets of a revival of unionism were not lacking. But for most in the South, the long delay had lulled to satisfaction. Modern industry, with its clean factories, its neat villages, its personnel management, its frank interchange between authority and the worker, had circumvented agitation. Men had found a short cut to industrial justice. The South, human and reasonable, had no need of the rusty and hampering mechanism of economic democracy.

The union leaders in the North pointed to quite other reasons for the backwardness of organization in the South. The surplus labor, unionism's greatest obstacle, made for insecurity and low compensation in industry. Most work was unskilled. The people were leaderless, ill-educated, and prejudiced against northern interference. Race-animosity bound the white workers to their employers. Paternalism, especially in the factory industries, acted silently and perpetually to stifle agitation. Propaganda against unionism, peculiar in its venom, penetrated the whole region. The textile industry was suffering from failure of leadership to control the flow of production. Lastly, northern unionism in the factory trades was too feeble to offer continuing assistance. Unionism failed to appear in the South, not because it answered no purpose, but because it was extremely difficult to introduce.

EARLY SOUTHERN LABOR MOVEMENTS

That organization was not unappreciated by the southern workers is

shown by the frequency with which, in the past, sections of them had embraced it. Even as far back as the days of the Knights of Labor, in 1886 and 1887, mill people at Augusta had struck under northern leadership, and scores of local assemblies had been formed. In 1899 the president of the recognized textile union of the American Federation of Labor had been a Columbus mill worker. The cotton-mill strikes of 1898-1902 in Augusta, Atlanta, Columbus, Burlington, and Danville, drew the American Federation of Labor into an extensive organizing campaign all through the South. Between 1912 and 1919, union strikes occurred in the textile mills of Atlanta, Anderson, Greenville, Columbus, Macon, Chattanooga, and Rock Hill. The wave of organization in 1919 and 1921 carried fifty thousand cotton operatives into affiliation with the United Textile Workers, and supported numerous strikes in North Carolina and Tennessee.

Nor was it only in the cotton industry that the war years brought organization. Unionism appeared in the tobacco factories, a bitter strike was fought in the Alabama coal fields, and the local trades in all the southern cities showed new activity.

It is often forgotten in the talk about southern labor organization that at least a part of the region has long had a labor movement which is by no means negligible. Unionism is the product of a stable economy; and the low-country South, whose cities have not greatly altered since the time when they were merely concentration points for cotton, is stable indeed in comparison with the Piedmont areas. In the cities along the fall line it is usual to find some of the building-trades, the railwaymen, the typographical workers, and the barbers, fairly well organized. In many places the street-railway

workers have been organized since the war, and here and there are locals of machinists, electrical workers, sign painters, letter carriers, laundry drivers, soft-drink bottlers, chauffeurs, and garment workers. The port cities show a fair degree of organization in the basic trades, and also of pilots, longshoremen, warehousemen, or pile drivers. The metal industries of Birmingham and East Tennessee have small unions among the skilled crafts. These organizations, with a few crafts typical only of certain localities, make up the permanent trade-union movement in the South.

PRESENT-DAY ORGANIZATION

The organizational equipment is technically complete. The locals are combined in the larger places in central labor unions that are somewhat less moribund than are those in many northern cities; the state federations of labor meet regularly and take their rôle in state politics seriously; and weekly labor newspapers are published in a dozen or more cities. But though the last few years have seen a good deal of expansion, the core of the low-country movement is in the old and conservative crafts, and a perfunctoriness that long characterized the whole southern movement still lingers. The thinking is pure American Federation of Labor unionism. The labor weeklies were until recently content with the triumph of publication; that the columns were filled with clippings sent from Washington did not matter. Few state federations did any systematic organizing. Louisiana neglected its shrimp packers, lumberers, oil workers, and longshoremen; Alabama left the mines to the mine workers, who left them alone. Birmingham seldom stirred the metal trades; the state federations in the Carolinas were visibly fearful of agitation in the textile,

tobacco, and furniture factories. The unionism had few closed shops and it seldom dared to strike, but it remained and grew. What stature it had attained by 1929 is difficult to ascertain even in round totals. Only one or two of the states could boast of twenty thousand union members, and most of them had closer to five thousand.

RECENT STRIKES AND THEIR SIGNIFICANCE

To some extent the great strikes of 1929 had their roots in an effort of the low-country trades to push unionism into the Piedmont. Such Piedmont cities as Danville, High Point, Winston-Salem, Greenville, the North Alabama towns, and Spartanburg were less well-organized, even in the non-factory trades, than were the cities in the old cotton regions. The Piedmont has the nature of a frontier, in the aggressive economy of which the unions have little welcome. When the first skilled factory craft went into the South five or six years ago with the entry of the full-fashioned hosiery industry, the northern unionists who dogged the new hosiery mills seized at once on the desire of the older nuclei to extend into the thriving trades of the factory cities. Thus in North Carolina the new device of an Organizing Council was hit upon. The Hosiery Union drew together, in monthly meetings, representatives of all the organized trades of the state, and the combination steadily advanced union membership. The Piedmont Organizing Council soon pushed two branches into Virginia, and included South Carolina in its work.

This movement was fully developed in late 1927 and 1928. The effect of the agitation on the factory workers was foreseen, and in October, 1928, delegates from the various state federations in the South met at Chattanooga

to plan the coöperation that would be needed to cope with a growing movement. The 1928 convention of the American Federation of Labor, at New Orleans, yielded a caucus of southern delegates meeting for the same purpose.

It was, therefore, not without important effort on the part of the existing southern union movement that unionism was seized upon by the textile operatives when pressure for a higher productivity led some of them to rebel in 1929. Rebellion, however, came before unionism, and many of the strikers did not join unions at all. At Elizabethton the girls who walked out were organized after the strike, and in a somewhat casual way, by a local carpenter. The Tennessee Federation of Labor controlled the strike for days before the agents of the United Textile Workers arrived. At Marion the union was brought in only a few days before the strike, and it had at the time only a small membership. The Gastonia communists never boasted anything more than a "nucleus" before their strike. At Ware Shoals the union was an afterthought, and in the numerous small strikes in Piedmont South Carolina, unionism was either avoided by the operatives or failed to become an issue.

Except in South Carolina, however, the right to keep the union quickly became the motive behind all the strikes. The United Textile Workers of America signed over a thousand of the Elizabethton operatives as members, and it had a majority as nominal members at Marion and in the second strike at Ware Shoals. The union has long had a constitutional rule against giving full support to strikes called before the group involved has been organized for at least six months, and under this limitation it was hesitant over its attitude toward the southern outburst. It shared its responsibility

at Elizabethton with the state federation and the Women's Trade Union League, and at Marion the leadership came through the Hosiery Workers' Union, with assistance from Brookwood Labor College.

The communist strike at Gastonia had no other ostensible aim than union recognition. More clearly even than the other strikes, it showed the aspiration of the mill people for economic responsibility. That hundreds of traditionalized Carolina mill hands, steeped in Biblical lore and supposedly supremely individualistic, should attach themselves with fanatical loyalty to a handful of men and women who preached communism is proof incontrovertible of a feeling of oppression. Doubtless the heroism of the communist leaders drew more loyalty, however, than their doctrines.

Probably it was the spirited response of southern capital to the wave of strikes that did most to arouse the labor movement in America and bring it to announce a new southern campaign. Troops were sent in at all five of the big strikes. Injunctions and spies were reported in use everywhere. Organizers were kidnaped or beaten at Elizabethton and Gastonia. Committees of local business men formed an inpromptu Fascist militia. Lastly, North Carolina justice gained no fame for impartiality. Deputy sheriffs who shot fleeing men were exonerated; night-riders who maltreated union leaders were identified but left untouched; trumped-up charges were entertained in court; organizers and leaders were jailed on the flimsiest evidence of "incitement to riot"; and at Gastonia the shooting of one policeman by union guards resulted in the sentencing of seven men to long terms (which they have so far escaped serving), while for the shooting of a woman unionist, no one was convicted. It

would be difficult to point to any strikes in American history which have aroused as much attention.

RECENT ORGANIZATION MOVEMENT

The labor movement outside the South could hardly have ignored the plain invitation of this outburst to southern organization. The United Textile Workers, too weak in the North to carry the load of southern work unaided, relied on the American Federation of Labor for help, as it has done successfully many times before. In this instance, however, the time seemed to have come for a powerful effort; the cause of organization had never stood so high in the region, and southern labor itself had never been so united. At the Toronto convention of the American Federation of Labor in 1929, it was decided that the unions of the whole country should join in an effort to strengthen themselves in the South.

Those who were at the convention reported a pitch of enthusiasm not seen in labor gatherings since the springtide of the Knights of Labor. Perhaps it was sensed that a strong southern wing would have in it the seeds of revolution for the American movement; that an energy sufficient to organize the craftsmen and the factory workers against the obstacles presented would be a mighty social momentum; that in turn, the fervor of the southern recruits could not fail to influence the policies of the old-line northern unions. The homogeneity of the southern workers, particularly in the factories, readily expresses itself in political action; there were prophets who foresaw a labor party with the organized South at its core. The mountain story of Elizabethton, simply told, vitalized a labor fraternity that for some decades had shown a certain artificiality.

Under this urge, the Federation launched its drive. The method was

that used at first in the attempted organization of the steel industry ten years before. Instead of forming a centralized organizing corps, the unions undertook to send as many agents as could be spared into the South together, each organizer to give most attention to his own trade, but all to cooperate in work with the factory industries. The headquarters established in Birmingham directed the representatives of the separate unions, with a number of agents sent in by the American Federation of Labor itself and a few men appointed by state federations or central labor unions. From early in 1930 until the present, this group has been operating in the South, with its numbers ordinarily at about forty, though at times as many as eighty organizers have been at work.

The coincidence of the campaign with the depression has minimized success. Also, there has been some tendency for state federations to lessen their own activity in deference to the campaign. Nevertheless, the southern movement has taken on a vigor which it is not likely to lose entirely. In the crafts in the older cities membership has grown somewhat, while in many places hitherto weakly organized, new crafts locals have become strong. The Mississippi organizations have shown a new life, and in Alabama four or five of the smaller cities have been very well organized. In Georgia, Columbus and Savannah have shown remarkable growth in membership. In the Carolinas and in Virginia, the campaign has been effective mainly among the city crafts; the fortress of the textile industries has shown few signs of yielding.

Altogether it is claimed that 112 new locals have been formed in the South since the campaign began. No attack has yet been made on the Birmingham metal industries, and the coal fields are being avoided until unionism in that

industry sets its house in order. A few locals of Negro workers have been formed, the campaign officials securing direct American Federation of Labor charters for them in cases where the craft union refuses colored membership, or permitting organization subordinate to the white locals as in the case of the textile workers.

PROBLEMS OF ORGANIZATION IN TEXTILE INDUSTRY

In the textile industry, organization has at times seemed within the grasp of the United Textile Workers. Over a thousand workers have joined at Huntsville, and hundreds more at Anniston; Columbus has been brilliantly unionized. In the Piedmont, memberships have been built up temporarily at Spray and at Leaksville, around Greenville, and notably at Greensboro. At Danville four thousand members of the company union were drawn into the United Textile Workers in a few days of speech-making.

The strikes at Elizabethton, Marion, Ware Shoals, and Gastonia have yielded no continuing unionism. This is probably due to lack of effort by the union officials. There has been no success with the hosiery industry, which is outwardly the easiest to organize of all the southern industries, nor has anything important been accomplished with the furniture or tobacco factories. The cotton mills have been at the bottom of a long slump during all the past summer, with short-time operation and with a very marked labor surplus. That membership could be built despite the bad times is partly due to the forbearance of the manufacturers, who have held their suppressive powers in check; it is, however, indicative of the faith still held by the workers in the union device.

Just at present, the combined lock-

out and strike of the Danville workers is absorbing the entire energy of the United Textile Workers, and except in Georgia and Alabama, the textile unionism elsewhere is being neglected. The Danville dispute is now concerned solely with union recognition, though it originated in a ten-per-cent cut in wages; it seems likely that a defeat there will dampen the textile agitation for some time to come. It may be, though, that the success of the manufacturers in organizing their production, which is at present carrying the trade into revival, will turn the tables.

AWAKENING OF THE SOUTH TO THE LABOR PROBLEMS

For the whole agitation certain broad results stand out. For one thing, southern middle-class opinion about labor matters has been remarkably changed. The harshness of the repression used in the big textile strikes angered many. People concerned about social development have searched the political and economic organizations of the region for explanations of the ready dominance of the employing classes. Many newspapers have thinly veiled a sympathy for the movement among the operatives. In this, the new coöperative policy of the union has been influential. The leading church organizations have protested exploitation. In North Carolina the seal was set to years of university open-mindedness by the election of an outspoken liberal to the presidency. So profound has been the distaste of some for the works of industrialism that the

voice of Calhoun is echoed in praise of the agrarian way of life.

A result that may be portentous is the emergence of a new solidarity among the laboring whites. The old fear of the craft organizations of arousing the unskilled factory workers seems dead; ready coöperation of the remaining textile unions, of the building-trades people, and of the other city crafts, is likely to endure. The labor movement of the region regards itself as a unit; state federations are now accustomed to regional conferences dealing with southern problems.

Already, unionism has carried weight in politics. The defeat of Senator Blease is said to have been partly due to a trade union distaste for him. In North Carolina the rank and file of the unions carried through a protest against Judge Parker's nomination to the Supreme Court, after the state labor officials had supported him. In Tennessee the attitude of the Governor during the Elizabethton strike has won him the enmity of labor.

If southern labor should discover a way of uniting in program with the distressed cotton farmers, a political rift of the first order would be in the making. It would need, however, whatever idealism the labor movement could muster to prevent a duplication of South African labor's oppression of the colored worker. Already, in Atlanta, some of the white workers have formed an anti-Negro organization of Black Shirts, intending to recover jobs taken over by colored workers. Such a union warns against organization too little influenced from outside.

Workmen's Compensation Legislation in the South

By JOHN B. ANDREWS

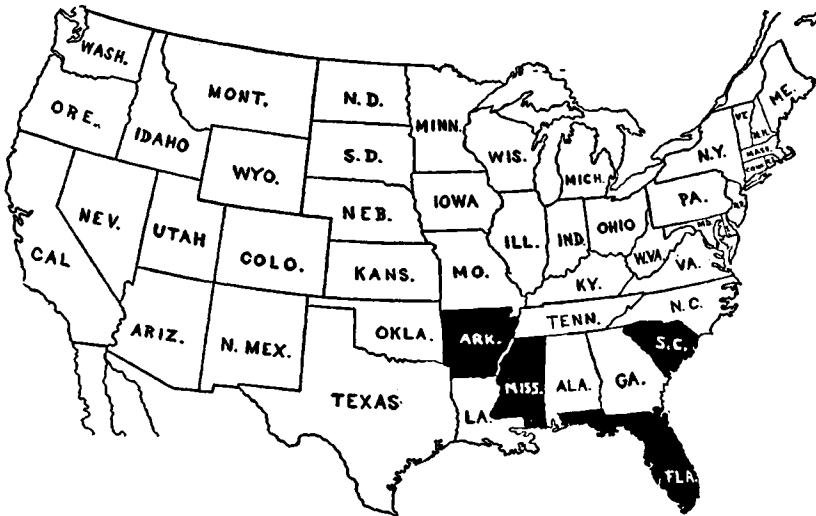
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WORKMEN'S compensation is a firmly established American principle which has been almost universally adopted as the most effective remedy when an occupational accident disables or kills a wage earner. Twenty year's experience in this country has demonstrated workmen's compensation to be for the best interests of employers and employees, as well as of the whole community.

Only four states remain—all in the

to pay, in addition to the expense of a trial, a big sum of money for damages. The injured employee who sues his employer gets practically nothing; even when he wins, he must divide what he gets with his lawyer. Moreover, a law suit stirs up hard feeling between the worker and his employer.

It has been conclusively demonstrated after exhaustive investigations by commissions in over twenty states that the doctrine of employers' liability



THE FOUR BLACK STATES HAVE NO COMPENSATION LAW.

North Carolina, in 1929, adopted this legislation.

South—without this modern accident protection: Arkansas, Florida, Mississippi, and South Carolina. In these states, under the antiquated system of employers' liability suits for damages which is still in effect, both employer and employee are at the mercy of law suits. When an industrial accident occurs, the employer may have

is unsuited to modern conditions of employment.

CONDITIONS IN NONCOMPENSATION STATES

The four laggard states, as well as the South in general, are becoming rapidly industrialized. Among the many activities common throughout

the non-compensation area that involve danger to life and limb are the extra-hazardous occupations of building and road construction, excavation work, and lumbering. There are in addition many other industries which are being increasingly developed: sugar and petroleum refineries, chemical works, ceramic and refractory plants, cement and building-material concerns, shoe factories, leather plants, brick and tile works, furniture and wood-working establishments, and numerous others. The building of new establishments requires the services of carpenters, painters, electricians, bricklayers, plumbers, welders, and common laborers.

Here is modern industry on a big—and rapidly increasing—scale carried on in these four states without workmen's compensation protection for the thousands of wage earners—men, women, and children—employed in thousands of plants and factories. In case of accident, the only recourse is through the cumbersome and inadequate damage suit remedy, which can be successfully invoked only when the employer can be proven negligent.

What happens to many of these accident victims is revealed in the records of tragic cases dependent for relief on public and private charity. The following, which is taken from the files of the Associated Charities of Columbia, South Carolina, is an example:

"Mr. Z, for many years in the employ of a paving company, was so seriously disabled when a ditch in which he was working caved in and crushed him that he will never work again. The paving company took him to a hospital and while he was there, flat on his back, settled with him for \$140. The company has moved its headquarters to a distant state and Mr. Z is dependent for support on his

home community through the Associated Charities in South Carolina."

Public sentiment in favor of the prompt adoption of workmen's compensation in these four states is rapidly increasing. In Florida, for example, institutes on the subject have been held in leading cities. Influential members of the legislature have announced their support of a fair and adequate compensation law, and the Governor in his last message declared that the time had come in Florida when industrial managers "should carry in an orderly fashion the wreckage of men as well as of machinery."

Governor Richards of South Carolina, in his 1930 message, recommended the passage of a workmen's compensation law, and the *Columbia State*—the leading South Carolina newspaper—published an informing series of twenty articles explaining the need for and the operation of workmen's compensation.

Commissioner Rooksbery of the Department of Labor in Arkansas, where a special state-wide committee on workmen's compensation has been organized, declares that the adoption of the compensation principle will "lead to greater ultimate benefits to every one, reassuring and stabilizing industry."

In Mississippi, the *Columbus Commercial Dispatch* declared editorially that "every newspaper in Mississippi ought to start a campaign for the enactment of a workmen's compensation law." Even some lumber employers have expressed themselves as "heartily in favor of such a law."

The State Federations of Labor in all four states have repeatedly gone on record in favor of workmen's compensation.

Carefully considered bills have been introduced in the legislatures of these four states, but have been defeated

because of the persistent opposition of damage-suit lawyers and certain other special interests, notably the lumber and wood-products employers. As pointed out by the *Daytona* (Florida) *News-Journal*: "Public opinion over the entire state should counteract next year any effect which the lobby of these selfish and shortsighted interests may be able to exercise towards the defeat of an adequate compensation bill."

VARIOUS ADMINISTRATIVE ORGANIZATIONS

The state which most recently adopted workmen's compensation was North Carolina, which passed a reasonably adequate law in 1929. Of essential importance to the proper operation of this act was the creation of an administrative commission of three full-time members.

This administrative organization is similar to that set up in Virginia, which has been perhaps the most effective of that of any state in this area. The Virginia act creates a commission of three full-time members appointed by the Governor for six-year terms, but with only one term expiring at the end of each two years—thus giving a desirable continuity of policy in administration. The commission may appoint clerical and other assistants, including deputies, and is accorded the powers necessary to secure proper administration.

Agreements between parties as to the amount and the terms of compensation are permitted, and reasonably adequate information is required to furnish a check on the settlements. Accident reports giving all necessary information must be filed with the commission by the employer and a supplementary report is likewise required upon the termination of disability.

In case of dispute, either party may apply to the commission for a hearing, following which the award is made. The decision of the commission is final as to all questions of fact, and appeals on questions of law are taken directly to the Supreme Court on Appeals.

Upon its own motion before judicial determination, or upon the application of any party in interest on the ground of change in condition, the commission may at any time review any decision and make a new award, ending, diminishing, or increasing the compensation previously awarded. Expenses of administration are paid by taxing all insurance carriers.

Somewhat similar procedure is secured in Georgia by utilizing the services of two existing officials in addition to two members appointed by the Governor who devote their entire time to the duties of their office. Georgia, however, permits limited appeal to the appellate court and thence to the Court of Appeals.

Contrast the Virginia system with the unfortunate practice followed in Tennessee. Settlements are permitted between the parties and shall be approved by the proper county court before they are binding. But reports, by means of which a substantial check can be made of the terms of the agreements, are filed with a Division of Workmen's Compensation in the Department of Labor. In case of dispute, either party may submit the matter to the county court by filing a petition setting forth the facts, whereupon a summons is served on the defendant, who shall file an answer. The judge of the county court hears the evidence and renders judgment. Either party dissatisfied with the judgment may appeal, as in other civil cases, to the next term of the circuit court, where the case is heard *de novo*. Any party dissatisfied with the judgment of that

court may pray an appeal in the nature of a writ of error to the Supreme Court, where the cause is heard and determined in accordance with the practice governing other appeals in the nature of a writ of error in civil causes.

All settlements by agreement and all awards where the amount of compensation does not exceed the compensation for six months' disability shall be final and not subject to readjustment.

The insurance commissioner is empowered to enforce the provisions of the act which relate to the assurance of payments, and may make necessary rules and regulations for the purpose of discharging his duties.

In Louisiana, enforcement of the act rests solely with the courts, without reference to any other state agency. This applies even to the provisions of the act relating to insurance, where employers are required to file proof of compliance with the clerk of the district court. No provision whatever is made in the compensation law for the reporting of accidents. A limited accident reporting law requires reports of only certain accidents to be made semiannually to the factory inspector. A New Orleans attorney, Isaac Heller, in discussing the failure of court administration in Louisiana, pointed out that

the situation can never be met by the administration of a compensation act by an agency which cannot of necessity really administer, which can only be a clearing house for the filing of papers, and which has no time or inclination to go into the merits of any case unless a manifest injustice is being done.¹

In many states in this area where—until the coming of workmen's compensation—labor legislation consisted of a child labor law and perhaps a law

limiting women's hours, comparatively little attention was given to creating effective administrative machinery. A department of agriculture and industries, or of labor and printing, was usually provided with a factory inspector as the chief enforcing officer. Some of these states in adopting workmen's compensation created a commission to administer that law but made no change in the existing department organization. Others, unfortunately, instead of creating a commission to administer the compensation act, placed that function with the courts; and in some cases—Tennessee and Alabama for example—existing departments were charged with certain routine functions such as receiving accident reports, supervising compliance with insurance provisions, and so forth.

An administrative commission is of course an essential prerequisite to an adequate workmen's compensation law. In adopting the compensation principle both the opportunity and the need are presented for establishing effective enforcement machinery through centralized commission administration. In these states at the present time, with workmen's compensation an important public issue, there is offered an unusual opportunity to secure desirable unified labor law enforcement through an industrial board or commission which must be created for the satisfactory administration of workmen's compensation.

PUBLIC RECOGNIZES NEED FOR WORKMEN'S COMPENSATION

It is generally agreed that the most important next step needed in this southern area is the adoption of an adequate workmen's compensation law with commission administration in the four remaining noncompensation states—Arkansas, Florida, Mississippi, and South Carolina. Second, there is grow-

¹ "Failure of Court Administration in Louisiana, *American Labor Legislation Review*, Vol. 20, No. 2, June, 1930, pp. 187-190.

ing appreciation that the court form of administration which is in force in Alabama, Louisiana, and Tennessee should be abolished and a commission should be created to supervise and enforce the provisions of the act. Third, the amount of compensation payable, which is strikingly inadequate notably in Alabama, Georgia, and Virginia, should be increased. Moreover, some of these laws need to be overhauled and reenacted in line with the better experience of the majority of the American workmen's compensation laws.

Recently there is coming into public discussion of the entire lack of workmen's compensation legislation in the four laggard states, a recognition by executives of chambers of commerce and associations of manufacturers that northern capitalists hesitate to set up branch establishments in states where

the accident compensation principle has not been adopted. "The greatest obstacle we find in bringing new industries into the state is the absence of a workmen's compensation law," is the testimony of several officials of chambers of commerce. "Why should we subject ourselves needlessly to the hazards of suits for damages on account of possible serious injuries to our workmen in these states?" is the ready response of northern business men who are familiar with the advantages of a workmen's compensation system.

Gradually, with the steady industrialization of the South and the increase of occupational hazards, a public sentiment is developing which is favorable to the adoption of the modern scientific method of dealing with this industrial accident problem through workmen's compensation legislation.

Adjusting Southern Agriculture to Economic Changes

By **DAVID L. WICKENS**

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SINCE the turn of the century the region of America's proudest rural tradition has faced the question of altering the arrangements on which that tradition has been based. Changes of a world-wide nature and developments within the United States and even within the South itself, have compelled attention to new forces in re-planning the economy of the old areas.

AGRICULTURE PREDOMINATES IN THE SOUTH

The old South was agricultural, with its economic activities and scale of social values closely related to land ownership. The initial importance of tobacco, which early in the nineteenth century was surpassed by the great staple of cotton, gave rise to a specialized and relatively simple agriculture which held many of its characteristics for a century. While other regions seized upon the new instruments of steam, electricity, and machinery to develop manufactures, such efforts in the South gave way to continued production of great quantities of raw materials, in which it was favored by both resources and experience.

Within recent decades, however, the old staples have encountered a rising competition in foreign markets. Each year the cotton from India and Egypt fills a larger part of the foreign demand. In the last season world consumption of American cotton decreased 1,600,000 bales from the five-year average of 14,600,000 bales, while consumption of Indian and other cotton was

about 1,100,000 bales more than the five-year average of 10,300,000 bales. In the home market new fabrics have entered to compete with cotton; rayon, for example, now constitutes four per cent of all our textile fibers.

Meanwhile the newer agricultural sections of the South have expanded their production until output in the cotton states west of the Mississippi now exceeds that of all the states to the east. In comparison with the western states, lowered fertility and smaller fields of the older area offer it little hope of reversing this position.

Amidst these changes which have shifted the center of southern agriculture to the westward, industrial enterprise has entered the old South to realize on unused resources. In numerous industrial towns, petroleum, coal, iron, and electric power have attracted industries in a rapid expansion of a new type of effort; more cotton is spun where it is grown and more goods are sold where they are made. Attention is concentrated on industry, while agriculture continues in difficulty.

Despite this impressive industrial growth, the fact remains that the South is dominantly agricultural. Industrialization has occurred in relatively restricted regions, and in wide areas the agricultural life has felt but little influence from industry. The people in cities are still fewer than those on farms. In 1920, 53 per cent of the people of 14 Southern states were on farms, and of those in towns, only five per cent were engaged in manufactur-

ing. The contrast between prosperous industry and unprosperous agriculture in the central and seaboard South, therefore, makes a major problem of the adjustment of the southern farmer to changed economic conditions. In the search for means to bring agriculture into balance, the farmer must employ the best technique of farming and he must recognize and apply as far as possible the principles responsible for the successful development of industry. An adjustment which involved the acceptance of a lower standard of living for agriculture would not be a satisfactory solution of the problem. The South's leaders in rural improvement are seeking better incomes and better living conditions for its farm families.

The problem centers in the central and southeastern states, where the character of agricultural production has long been well defined and where industry has entered most extensively. The western states, notably Texas, have in the main continued their development through the past decade and are by comparison more prosperous. The number of farms in the West South Central region has increased 109,000 or ten per cent over 1920, and the increase that occurred in farm mortgage debt was mainly that incident to active land sales and improvements.

FARMS NOT PROSPEROUS

By contrast, the situation in the central and eastern South presents unmistakable evidences of the need of economic adjustment if the business of farming is to be as desirable as industrial occupations. Land values in the Carolinas, Georgia, Alabama, and Mississippi declined during the past decade, 1920-1930, to fifty-eight per cent of their 1920 prices. The increase in mortgage debt in the South Atlantic area from 1925-1928 was twelve per

cent, or larger than that of any other geographical division. Furthermore, the proportion of farm mortgages which end in foreclosure in this area is the largest in any geographical division, amounting to more than seven per cent. Even for the three southern geographical divisions as a whole, the increase in farm mortgage debt from 1910 to 1928 was the most pronounced in any area of similar size, being 146 per cent for 1910-1920; 26 per cent for 1920-1925; and 5 per cent from 1925 to 1928. In this area is found the greatest proportion of merchant credit, whose cost, generally ranging from twenty-five to thirty-five per cent, represents the most expensive form of farm borrowing. During the past ten years the number of farms in the South Atlantic division decreased by more than 98,000, making 8.5 per cent fewer than in 1920. The exodus of population from farms and small towns has been marked. The difficulty is not simply one of overcrowding. While desertion and abandonment have been extensive, the remaining farms are generally unprosperous also. Notwithstanding this situation, little conscious adjustment seems to be in process.

Foreclosure and forced migration offer one solution of the question, but they can scarcely be said to be satisfactory. In so far as consequences of present trends can be anticipated they should be forestalled by action aimed to reduce as much as possible the human damage which will result from continued operation of uneconomic farm enterprises. Since the trend toward more manufactures and more foreign competition in raw products seems likely to continue, agriculture must hasten the changes necessary for a nearer equalization of the returns to capital, labor, and skill employed on the farm as compared with those employed in industry.

THE PROCESS OF ADJUSTMENT

The adjustments required by southern agriculture are neither few in number nor simple in nature; but if a general improvement program were to be formulated, it would center about the application of science to production and accounts and a more continuous use of capital and labor employed. Successful industry has acquired its current effectiveness in technical production and cost analysis largely by ferreting problems to their base and prescribing the remedy. Reasons may be found to explain why agriculture has not followed this course with equal rigor, but the time has come when, if foresight and prevention are to be substituted for foreclosure and loss in this most fundamental of occupations, bold steps must be taken. The problem is not susceptible of immediate solution, but the changes begun should be entered upon with a full realization of the extent of the necessary adjustments.

It may be taken for granted that any sound program for the improvement of agriculture should first envisage a maximum use of the best technology of soils, crops, and livestock. The soil chemists of the Southern state colleges and the Federal Department of Agriculture have assembled valuable bodies of knowledge concerning soil types and the nature and the proportions of the plant-food elements required for the optimum supplementation of the soils of the South. Yet despite instruction of great numbers of students of agriculture in colleges and high schools, and of farmers themselves, and a thorough system of extension service, a great amount of such scientific data has not been put into general practice. A soils expert recently observed with regard to the general use of commercial fertilizer in the eastern cotton belt that "unfortunately in many cases appar-

ently too little is used or it is used without enough skill to secure the best results." Approximately one half of the farmer's short-term credit is used to buy this fertilizer and the cost for its purchase on credit averages from thirty to forty per cent per annum. This wide margin for covering risk is further evidence that the farmers' use of soils, fertilizer, and crops is still too imperfect to avoid much wasteful outlay.

IMPROVED SEED NEEDED

Of primary importance in a constructive program for the cotton belt is the use of improved seed to insure high quality of product. The cotton of a community is notably more valuable when improved varieties, especially those with longer staple, can be offered to the market. Although foreign competition in short staples has compelled attention to this point, only a minority of growers use improved seed.

One of the most hopeful developments has been the steady increase in legumes during the past decade. As an improved source of hay, as a rotation crop, and especially as a soil builder, this class of crops merits the greatest interest. Yet less than five per cent of the crop lands of the South is devoted to the production of legumes.

"Cover crops," which serve the purpose of preventing or reducing loss of soil fertility through erosion during that part of the year when active cultivation is not going on, have become of utmost importance both east and west of the Mississippi River. Reduction of the present devastating loss from heavy rainfall during the tillage season could be effected by greater use of terracing for holding to a minimum the damage from water runoff. Such terraces should be so constructed as not to impede the use of machinery.

ATTENTION TO LIVESTOCK NEEDED

In the field of agricultural technology, perhaps the South is most in need of better use of livestock, especially in dairying and poultry. The steady decline in the livestock population has left farms with no livestock whatever aside from work animals. In 1925 only 68 per cent of Southern farms had milk cows. The lack of corn makes beef and pork production difficult, but the use of peanuts for hogs, and the use of legumes and other forage crops for all classes of young stock and poultry can do much to overcome this handicap. At present the stock owned is often of poor quality, and the care given it often poorly calculated to make the stock profitable. So generally is this true that, save in the southwest, livestock generally is not favored as a basis for farm credit—a situation which contrasts strongly with that in other parts of the country, where livestock is prime security. The neglect of livestock in general was less serious while field crops and woods were satisfactory sources of income. Now that the goal of a more adequate income requires a production program broadened to include better utilization of secondary and near-marginal lands by means of forage or timber crops, more livestock becomes an essential of the new program.

Among the serious obstacles to adequate livestock is a lack of farm fences, which in turn is often due to unstable tenure relations. The neglect of veterinary science is responsible for much halting in improvement of the use of suitable livestock. The mild climate has made the control of parasites an indispensable condition for profitable production. Progress in this respect has gone farthest in Texas and the southwest, where the unit expense has been lower because of larger num-

bers and where improved pastures reduce the seriousness of attacks. The southeast has already shown that it can control parasites by its experience with the weevil and other cotton pests. Until similar care is applied to livestock, we may expect that it will be difficult to produce stock profitably, and that the country banker will continue to be skeptical as to the quality of loans based on security which often dies or is produced at a high cost.

HOME PRODUCTION ADVISABLE

Perhaps no counsel has been more widely given to southern farmers than the advice to "live at home"; that is, to produce on the farm all the food, feed, and wood required during the season. This course often can provide a substantial saving in current expenses. Often, however, it will have its principal result in a better quality of diet and higher standard of living for the farm family without materially affecting the farm income. A survey of several hundred farmers in the Carolinas and Georgia showed that they were already producing over eighty per cent of the food, feed, and wood which could be grown practicably on their farms. The entire amount of these items is often small because of the limited livestock owned. Even when livestock has become more important, the advantage from self-sufficiency may be expected to result from the expanded scale of operations quite as much as from the fact of home production.

It must not be supposed, however, that the improved practices here illustrated have been entirely neglected by southern farmers. Great numbers of them have used improved crops and stock on the farms they have occupied, and at the conclusion of a period of faithful years have found that their annual income was unsatisfactory, their total worth no greater, in brief, that

some further alteration of their economic program was necessary. For such cases the simple admonition of better farming or home production of supplies is inadequate. It is not a solution of the problem to follow any number of better practices if, at the conclusion of a period, the farmer fails and loses his farm.

For such cases, more comprehensive efforts are required for increasing the farmer's income. Whether the change is made in agricultural technology, in the size of the farm, or in adjustment of other production factors, the net result must be an increase in the per capita income per farmer. In practice, this will usually involve an increase in the volume of business and an increase in the product per man.

THE LESSON OF INDUSTRY

The successful advance of industry has revolved about the increase in the amount of capital equipment per worker and its effective organization in such a way as to provide continuous periods of work for the labor employed. The part of the worker, whether manager or operative, has been concerned less and less with hand labor and steadily more with direction of the material represented by capital investment.

The parallel between farming and industry finds limitation in the detail, but the principles required for successful operation of the two are the same in many respects. The farmer must work out the problem in relation to the factors which enter into agriculture's business, but the general goal of greater capital per worker would seem to be a necessity common to all his effort. The farm that is too small must include more land. Inadequate production per farmer must be supplemented by additional output of the same or other products. Machinery must be used to its optimum profit.

With the decline of soil fertility, and increased competition from new lands here and abroad, extensive culture must increase, while intensive culture is reserved for the better lands. If machines cannot be employed, the production plan must be changed.

In brief, if the family income is to be the criterion, all other items must be made flexible to it. The spectacle of a full-grown man following an eight-inch plow drawn by one eight-hundred-pound mule about a small irregular field, illustrates a waste of human time that cannot be reconciled with the economics from power and machinery with which that farmer must compete in his efforts for a higher standard of living. The difficulties in the way of changing this condition are not so simple as might be supposed, but the necessity of removing it from the common place it has had in the past would seem to be beyond question.

Despite the fact that the South has the lowest labor rates of any part of the country, labor constitutes the bulk of all farm expenses. Studies in both prewar and war years have shown that from fifty to fifty-seven per cent of the total farm expenses on white-owned farms was paid out for labor. Labor cost was more than one third greater than interest on capital invested. It is apparent that economies lie in the direction of greater use of machinery or of livestock.

Reduction of the cost per acre and per unit of product for many farms will be contingent upon whether the machine can be used on enough acres to distribute the cost per unit to a figure less than that possible by means of hand labor and present tools. The use of machinery meets a serious obstacle on many small farms of the South. Larger farms, obtained by lease or purchase, would seem to be necessary in many cases. Where land

valuations are higher than warranted by returns, a greater emphasis on renting as opposed to buying land may be used to align land values.

EXPANSION OF PRODUCTS AND MARKETS

When with the aid of machinery, however, the farm's acreage of cotton or tobacco cannot be extended to further advantage, other crops and products must be found which will round out a profitable production unit. Often these will be forage crops, which can be cared for largely by use of machines. In other cases the emphasis will be on truck crops or other intensively cultivated crops. Poultry and dairy production can expand outlets especially in the vicinity of cities, as illustrated by the development of the dairy industry about Augusta, Georgia. Subsequent production for profit may be expected to be limited by the growth of the industrial center served. Localities of favorable soil and transportation conditions can expand production for distant markets. Very often the acceptable production unit must find its needed additional gross income from an expanded production of livestock and livestock products, especially when the nature of the available land's topography and fertility recommends its use for pasture rather than for cultivated crops. The objection that the task of cotton picking limits the area which may wisely be planted, cannot continue to prevent the adoption of such crops or other additional income-producing enterprises as may be required to increase the total income of the individual. Although the solution may take many forms in its major or detailed arrangements, the goal must be a production plant of adequate gross income.

The result of the search for a farm of profitable size is likely to be a unit

averaging larger than those now in use. In some sections, large plantations in need of subdivision constitute exceptions to this direction for adjustment. The large farm has the advantage of offering more opportunities for varied production of crops and livestock, without eliminating the cash crops necessary to the optimum income. Extensive analysis of the effect of the size conditions of farms in England and America clearly shows the advantages of the larger farms.

In a large number of areas an improved production system must include a greater acreage in farm woodlots to supply timber and fuel for farm use, and very often a considerable part of the farm area should be devoted to forest to supplement the raising of crops and livestock. In this direction, however, difficulties appear. The long period of waiting for forest to reach maturity presents a serious problem to the individual farmer with limited capital. In most instances, tax adjustment is needed. However, a timber-growing area on the individual farm has the advantage of being cared for and kept free from fires without the additional labor expense required for a detached area in forest. Moreover, the heavy rainfall and the mild climate of the South, now aided by lower land prices, offer basically favorable conditions for the growth of this long-term crop. Beyond what can be feasibly undertaken by the individual farm lies the problem of providing a long-time program of land utilization involving reforestation for areas of extensive farm abandonment, aided by modifications in the public fiscal policy.

CONTINUOUS PRODUCTIVE OCCUPATION NEEDED

The new production program for improving the present farm situation in the South must include as a definite

objective a more complete use of the farmer's labor. The present long periods of relatively idle or nonproductive time of many southern farmers amounts to a serious condition of seasonal agricultural unemployment. An observant country merchant in South Carolina remarked, "The trouble with our farmers is that they cannot get work to do in the winter." This situation constitutes one of the best reasons for the presence of more livestock, especially dairy cattle whose care may profitably occupy the farmer's time by contributing sales or home products used in the family living. For many farmers, however, this will require an improved knowledge of the care of livestock.

Opportunity to work in industrial plants during the dull seasons is already one of the aids which industrialization has brought to farmers, though in general, the communities so favored are a minor part of those needing more continuous employment. Year-round employment for many country people near industrial centers has been provided by markets for poultry and dairy products. Seasonal shifts from farm to factory, woods, or road work does not fill the need. Moreover, the woods are offering steadily less work. The only solution for many farmers will be a farm unit of adequate size and a sufficiently varied production program to occupy the farm-labor time productively throughout the year. Farmers who regard with favor the regular income from industry's activity must not fail to observe that an important part of the cause for the steady employment is well-planned work of a profitable nature. A diversified program of an extended farm plan contributes to this end by filling in the gaps of the work schedule.

An important part in the adjustment of the South must be found in a more

flexible system of rental contracts for the land. These changes must include an extension of the term of tenure, a less strict adherence to the plan of renting the entire farm area on shares, and an increase in the use of cash or standing rent for acreages more profitable in pasture or other non-cash crops. The investigator frequently finds a tenant fully aware of desirable changes needed in his farm program, but unable to put his plans into effect because of the rigidity of his rental contract. Flexibility of economic arrangements is an indispensable factor in establishing new methods of renting, new size of farm units, greater use of machinery, and a more uniform employment year.

FINANCIAL ARRANGEMENTS

Because most of the farmer's economic activities are reflected at some point in terms of money, many needs for adjustment are found in the farmer's finances. The fact that credit costs are generally higher in the South than in other principal sections of the country reflects in part the greater unit handling costs due to the small loans on small farm units, and in part the greater risks of the business financed—a payment for losses from unprofitable expenditure of capital.

Failure to realize the significance of credit cost often results in poor economies for the farmer. Few industries could thrive which did not distinguish between credit charges at seven per cent per annum and a flat rate of seven per cent of the account. In farm mortgage credit, rates on good loans in the same community have been found to vary from five and a half to ten per cent per annum.

The farmer's bad financial practice reaches its worst form in merchant credit, a form of advance found more extensively in the South than else-

where. The high costs for such credit are only in part opportunistic charges. A group of twenty North Carolina merchants who were charging an average of twenty-five per cent for credit, reported losses costing over fifteen per cent. Fertilizer companies report that their additional time charges have been offset by losses on credit accounts. For both farmers and dealers, this margin of business which does not pay its way becomes a serious burden to the credit user who pays his bills. Much of the cause of this incubus goes back to the failure of farmers to carefully analyze their business for unprofitable features and to insist upon close calculations in arranging their credit and purchases.

Doubtless the continued use of merchant credit is partly due to failure of farmers to discriminate between the various considerations of interest, risk, and handling the transaction. The customer cannot readily reduce the lump sum charge for such credit of irregular term to a per annum cost. This confusion obscures the consequences of the practice. North Carolina croppers annually pay in excess of the legal rate for their credit, a sum approximately equal to their average annual gains. The reduction of this evil is not encouraged by the fact that prompt payment of these flat rates causes the per annum rate to be higher than if the bill runs overdue. The confusion in the meaning of rates is made more difficult in some states by laws which restrict the per annum rate to levels not wholly practicable.

Much of the needed adjustment in rural finances as well as in farm organization must wait upon the action of farmers, since it is they who determine the production system and accept the risks. When the farmer becomes more finance-minded, dealer credit will tend to be limited to such accommoda-

tions as are warranted by convenience.

RELATION OF AGRICULTURE TO INDUSTRY

In addition to those adjustments within agriculture itself, there is need of correcting the present relative emphasis as between agriculture and industry. The logical field in which such shift of attention should first appear is within the South itself. Instead of this, much of the growth of industry in the South thus far appears to represent a transplantation of capital and enterprise from other areas, rather than a movement in which the southern farmer takes an initial or participating part. The farmer's part has been largely inactive acceptance of a situation, rather than a conscious coöperation in bringing about less emphasis on agriculture and more on industry until the two lines of activity are brought into balance on a parity of economic advantage. In a great many southern towns of several thousand population or more, there is an eager bidding for the location of new industries. Usually the relation of agriculture to the new industry is not mentioned either in town or country. Industry is welcomed because it is profitable. Agriculture is neglected because it is unprofitable. At least the farmer must realize that his problem of adjustment may include not only drastic changes in the farm organization but also a disposition of resources in the light of alternatives entirely outside the farm.

The agricultural problem in the South is like the farm problem for the country as a whole, in that agricultural production has been overdeveloped; hence, measures for its improvement must include a contraction of activity. In other respects, the South's problem is distinctive. Parts of the southeast face the question of a reduced soil

fertility, a definite handicap in competition with new land. The fact that a part of present-day problems in southern agriculture are related to long-established custom probably makes the adoption of new methods more difficult. This influence is illustrated by the smaller number of voluntary land transfers and the larger number of transfers by inheritance than occur in any other area; yet of all areas, the southeastern states need most to consider reorganization of the size of farm units, and hence, for a permanent basis, transfer or long lease of farms or parts of farms. The presence of a large class of tenant laborers results in the necessity of giving a machine training to some and of finding alternative employment for others when new mechanical methods are introduced, though the task of mechanical training is not so great as it has sometimes been represented. The cheap automobile has provided valuable instruction.

The question of alternative employment is illustrated by the case of the South Carolina farmer who, faced by the fact that his 150 acres were no longer adequate to support satisfactorily all the people on the land, was

deterred from a pronounced shift to other crops and machine methods chiefly by his concern over what would become of the five tenant families which had long been dependent on his farm work. Certainly the growth of industry has not yet made alternative employments consciously available to the present farm population.

ADVANTAGEOUS FACTORS

On the other hand, certain distinct advantages are to be found with the South in this problem of adjustment. The presence of certain leading raw materials and of power permits that area to integrate its agricultural and industrial resources. The much wider area of arable land in the South as compared with New England, more easily permits the preservation of a balance between agriculture and industry than has been possible in the northeast. Reorganization of southern farm economy on the basis of parity of income for the farmer can preserve the country life of the area on a plane comparable with the rising scale for industry, consistent with best rural standards, and worthy of the prized traditions of the South.

Banking in the South: Its Relation to Agricultural and Industrial Development

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DEVELOPMENT and organization of banking in any section of the country are largely determined by the nature of the credit requirements of the important industries of that particular community. In the South, from the days of the early plantations, agriculture and commerce have called for large amounts of credit, and in recent years manufacturing, lumbering, mining, and other industries have also needed credit for their development and operation. Thus it has come about that the banking and credit system in this section has developed in response to the somewhat diverse requirements of all of these, but in particular it has been shaped by the exigencies of an agricultural economy.

EARLIEST FINANCIAL SYSTEM

The genesis of the present banking and credit system of the South dates technically from the Civil War, but many of the problems that underlie its organization had their inception much earlier and are deeply rooted in the agricultural organization of the region. Prior to the Civil War, plantations operated with slave labor were the units upon which the agricultural system in a large part of the South rested. They were large in size, and problems of producing, marketing, and financing the crops were supervised and directed by the "planter," who was owner and manager.

Factors located at the principal ports and at commercial centers on

inland waterways, were relied upon by the planters for funds, supplies, and equipment during the growing seasons and to aid in marketing the crops. The early financial system in the South thus developed around the factors. In seasons when the credit requirements of a planter were larger than the factor could accommodate from his own immediate resources, he turned to merchants and banks in other cities of the United States and often in the leading cotton and tobacco markets abroad.

As elsewhere in the country, banks began to develop in the different Southern states shortly after the Revolutionary War. In several of the leading cities—Baltimore, Alexandria, Richmond, Charleston, Savannah, and New Orleans—they were established very early, some of them being branches of the First Bank of the United States and others being state banks. State banks increased rapidly in the first two decades of the nineteenth century, largely in response to economic conditions resulting from expanding commerce during the period. Following a decade of very little growth from 1820 to 1830, the number of banks and banking resources began to increase again in the early thirties. A number of new state banks were organized and the capital of others was increased to take over the work of the Southern branches of the Second Bank of the United States when it became certain that it would not be rechartered.

Widespread monetary and business disturbances, however, followed the closing of this national institution in 1836. Bank failures in the South and elsewhere were numerous and recovery was very slow. But from about 1848 to the beginning of the Civil War, southern agriculture and commerce again expanded rapidly and the number of banks grew to be larger than at any previous time. The banks as thus established were an important part of the financial system of the South before the Civil War, supplying as they did a large part of the credit and currency needed by factors, planters, and merchants in agricultural and commercial transactions.

BANKING DEVELOPMENTS AFTER THE CIVIL WAR

Destruction of the plantation system made the banking and credit arrangements that had grown up prior to the war no longer applicable. When each former slave became a free and independent laborer, the problem of supplying food, clothing, and so forth, to meet his needs became one that he himself had to face. Under the plantation system, this responsibility was one that the planter had to carry.¹ To supply the small farmers—tenants and small owners—as well as many of the plantation owners who found their former financial connections no longer adequate, merchants in the smaller towns in the interior began to assume the rôle of “bankers,” and gradually became known as “merchant-bankers.” In addition to financing the farmers during the growing season, these merchants began to serve as agencies for marketing the crops, and

thereby to render services to the small land owners and tenant farmers similar to those that were rendered by factors and commission merchants to large planters prior to the war.

Losses to banks because of the Civil War resulted in an almost complete destruction of the banking system that had developed between 1790 and 1860. However, as social conditions were reestablished and as agriculture and commerce began to revive after the war and Reconstruction, there was gradual development of banking. In 1863 the National Bank Act was passed by Congress, and soon after the termination of the war a few of the state banks of the South that had survived the war were reorganized under national charters; others resumed business under state laws and still others were organized for the first time. All of these were a nucleus for the rebuilding of the banking system to meet the needs of the South under the greatly changed conditions.

Accurate data pertaining to non-national banks prior to 1876 are not available, and it is difficult to present an adequate picture of banking development from the close of the Civil War to that time. The extent of the development of banking in the South after 1876 is revealed in Table I.²

Although the table shows that by 1876 banks in the South held about \$160,000,000 of deposits, and that 1,127 banks were in operation, progress had been slow up to that time. Capital was scarce and economic and political conditions were very unsettled.

¹ Professor Thompson, in his article earlier in this volume, has described the breakdown of the plantation system and the effect of the increase of tenant farmers on the organization of southern agriculture.

² Data relate to sixteen Southern states including the border-line states of Missouri and Oklahoma. Statistics for 1876-1923 compiled from article “Fifty Years of Banking in the South,” by Hon. D. R. Crissinger, Governor of Federal Reserve Board, in *Manufacturers' Record*, Part II, Dec. 11, 1924; statistics for 1930 compiled by author from *Federal Reserve Bulletin*, Oct. 1930.

TABLE I—NUMBER OF BANKS AND AMOUNT OF INDIVIDUAL DEPOSITS IN THE SOUTH

Year	Amount of Individual Deposits	Number of Banks
1876.....	\$160,187,000	1,127
1881.....	221,759,000	1,007
1909.....	1,728,037,000	7,391
1914.....	2,372,031,000	9,207
1919.....	4,958,956,000	9,459
1923.....	5,958,175,000	9,854
1930.....	6,971,096,000	7,411

DEVELOPMENT AFTER 1880

In the last two decades of the nineteenth century, and especially in the later years, perceptible growth in manufacturing and improvement in agricultural conditions were accompanied by a rapid growth in banking. This continued at an accelerated rate after the opening of the present century. The above table shows that during the period 1881 to 1909 the number of banks increased sevenfold, from 1,000 to 7,400, and that the amount of deposits increased eightfold, from \$222,000,000 to \$1,728,000,000. The increase in the number of banks during this period reflects the rapid growth of banks in the smaller towns and cities throughout the South. An amendment to the National Banking Act in 1900, permitting national banks to organize with a minimum capital of \$25,000 instead of \$50,000 as theretofore, was one factor that stimulated the organization of many small banks in the decade that followed.

After 1909, deposits in the South continued to increase and reached a total of approximately 6 billion dollars in 1923 as compared with approximately 1.7 billion dollars in 1909. The number of banks on the other hand did not keep pace with the growth in deposits during this period and as a result the average size of the banks became perceptibly larger.

In comparing this rapid growth of banking in the South with the growth for the country as a whole, Hon. D. R. Crissinger, a recent Governor of the Federal Reserve Board said:

During the period, 1873 to 1923, . . . the banking power of the South has grown at a rate almost twice as rapid as the increase in the aggregate banking resources of the Nation. . . . In the fifty years that have elapsed since 1873 the deposits of all the banks in the country have increased twentyfold while in this Southern section deposits have grown by almost forty-fold. . . . This record of growth in Southern banking is a striking fact reflecting the increased agricultural, commercial, and industrial activities in these states.¹

Since 1923, banking progress has been slower than up to that time, largely because of the failure of agriculture to keep pace with industry. Bank failures, particularly in rural sections, explain to a large extent the decline shown in the table in the number of banks. But notwithstanding this decline in the number of banks in rural sections, growth in deposits elsewhere has been sufficiently large to offset the losses from failures in those regions and to result in an increase in total deposits of about twenty per cent from 1923 to 1930.

ORGANIZATION OF SOUTHERN BANKING

Partly by reason of the relatively small capital and deposits of many of the banks in the Southern states, and partly because of the nature of the credit problems peculiar to agriculture, it has always been necessary for the banks in the smaller towns to maintain connections with correspondent banks in the nearby larger cities and for the latter to maintain connections with the principal financial centers of the United States. By means of these interbank

¹ *Manufacturers' Record*, Part II, Dec. 11, 1924, p. 133.

connections the reserves of country banks are carried on deposit at city banks; balances are deposited at interest in the larger centers during periods when they are not needed to accommodate local demands; funds are borrowed by banks in the smaller centers; checks are collected and the proceeds remitted; and information is furnished between the country bank and its city correspondent pertaining to business, credit, and financial conditions. It is through these interbank relationships that the smaller banks obtain assistance from those in the larger cities to aid them to meet the seasonal demands for credit and currency. It is also through them that the country banks find an outlet for their surplus funds during periods when local demands are comparatively small.

The principal cities that have developed as financial centers in the South under the system of correspondent banking include Baltimore, Richmond, Charlotte, Savannah, Atlanta, Jacksonville, Birmingham, Chattanooga, Nashville, Memphis, Louisville, St. Louis, New Orleans, Houston, Dallas, Fort Worth, Galveston, El Paso, San Antonio, Waco, and others. Under the national banking system and the Federal Reserve System these cities are classified as reserve cities, and as such centers they are closely interwoven in the network of southern credit and banking arrangements. Banks in cities other than these serve the smaller banks in the nearby rural sections in the same way and are also important links in the correspondent banking system. They are less important, however, than the ones mentioned.

For almost a quarter of a century prior to 1915 the banking system, as thus organized, developed and adjusted its operations to the requirements of agriculture. Adjustment, however,

was made easier by the rise in agricultural prices for the period as a whole than would have been the case if the trend of prices had been downward. The effect of mistakes of management and losses from reduced agricultural yields from time to time were often minimized by the continuous increase in prices. Liquidation following the harvests proceeded fairly regularly from year to year; "frozen credits" were seldom of more than local significance; and bank failures were comparatively few in number. During the period of the World War, the relations between southern banking and agriculture as thus established continued under the still more favorable conditions caused by the high prices for southern agricultural staples, particularly cotton.

BANK FAILURES AFTER DEPRESSION OF 1920-1921

A reversal of this long period of first slow and then rapid growth in banking came in the depression and low prices in 1920-1921. Banks in the South, however, weathered the storm of these years somewhat more successfully than did those in agricultural regions of the Middle West. After 1923, on the other hand, a series of crop failures in certain sections, relatively low and widely fluctuating prices, and excessive speculation in land in Florida, resulted in heavy losses to many communities, and bank failures were particularly numerous. The extent to which failures have occurred is revealed in the fact that during the period 1921-1929—nine years—a total of 2,117 banks in the sixteen Southern and border-line states suspended operations. Suspensions were greatest in number in Georgia, Texas, Oklahoma, Missouri, South Carolina, Florida, and North Carolina. Table II shows the total number of suspensions in the different

Southern states and for the United States as a whole during this nine-year period.

TABLE II—BANK SUSPENSIONS IN THE SOUTH
1921-1929

State	Number of Banks
Georgia.....	319
Texas.....	299
Missouri.....	296
Oklahoma.....	267
South Carolina.....	227
Florida.....	190
North Carolina.....	125
Arkansas.....	95
Tennessee.....	66
Virginia.....	45
Kentucky.....	43
Louisiana.....	34
West Virginia.....	34
Mississippi.....	34
Alabama.....	32
Maryland.....	11
Total South.....	2,117
Total United States.....	5,641

In 1930 failures continued, and in November and December a series of suspensions in Tennessee, Kentucky, Arkansas, and North Carolina particularly, brought the number of closed banks for that year to record totals for those states.

Because of special conditions that often prevail at the time an individual bank suspends operations, it is difficult to offer a general statement as to causes of failures at any one time or in any section. It seems reasonable nevertheless, when there is a rapid succession of failures in the same general area and in a comparatively short time, to look for some common cause.

In the organization of banking in the South the large number of small, independently owned and operated banks is an element of weakness. Under conditions similar to those that

characterized southern agriculture before 1915 and during the period of the World War, this weakness is not apparent; but when a series of adverse developments strikes a locality the small banks are not strong enough to meet the situation, and the weaker ones are often forced to suspend operations. It is difficult to protect and save the small banks under such conditions, and when one finally reaches the point of suspending operations the effect is soon felt by others nearby. If a sufficiently large number are affected by the same general development the effect is reflected at the nearby city correspondents and at the more distant centers. It is this weakness that is inherent in the system of banking in the South that rests upon small and independently owned and operated banks. It explains to some extent the widespread failures in recent years that followed from adverse economic conditions resulting from crop failures, low prices, and excessive speculation in land.

BRANCH, CHAIN, AND GROUP BANKING

To meet some of the weaknesses that are thus apparent in the organization of southern banking, experiments have been made with forms of branch, chain, and group banking. It is yet too early to appraise the results of these in meeting the problems of the independent banks but it is significant to notice from the following tables the extent to which these forms of banking have developed in the South.⁴

Branch, chain, and group banking are forms of organization whereby a number of banks or banking offices in different communities or in the same

⁴ Table III is taken from Hearings before the Banking and Currency Committee of the House of Representatives, 71st Cong., H. Res. 141, Vol. I, pt. 4, p. 473. Table IV, *op. cit.*, pt. 2, pp. 163-184.

TABLE III—NUMBER OF BANKS OPERATING BRANCHES AND NUMBER OF BRANCHES IN OPERATION, DECEMBER 1929, BY STATES IN THE SOUTH

Southern States	Number of Banks Operating Branches	Number of Branches
<i>State-wide branch banking permitted:</i>		
Maryland	30	124
North Carolina	39	77
South Carolina	11	57
Virginia	39	61
Total	119	319
<i>Branches restricted as to location:</i>		
Georgia	16	39
Kentucky	10	28
Louisiana	42	106
Mississippi	11	25
Tennessee	32	68
Total	111	266
<i>Branch Banking prohibited by law: *</i>		
Alabama	5	19
Arkansas	2	3
Total	7	22

* Branches reported were established prior to prohibitory legislation.

TABLE IV—NUMBER OF GROUPS OR CHAINS OF BANKS, NUMBER OF BANKS OPERATED, AMOUNT OF LOANS AND INVESTMENTS BY CHAINS OR GROUPS, DECEMBER 1929, BY STATES IN THE SOUTH

State	Number of Groups or Chains	Number of Banks Operated	Amount of Loans and Investments (Thousands of dollars)
Alabama	4	26	39,188
Arkansas	3	24	16,768
Florida	6	36	127,282
Georgia	5	24	174,033
Kentucky	3	18	149,372
Louisiana	2	10	33,078
Mississippi	3	21	15,119
Missouri	7	41	158,374
Oklahoma	8	73	101,152
Tennessee	4	87	183,139
Texas	16	86	104,384

community are brought together into one organization and operated by one general management. Under a branch system each office is operated as a branch under the name of the parent bank; while under a chain or group

plan, the different banks are usually operated as separate units, each under its own name, but owned and managed in part or entirely by the central company.

To a certain extent the formation

of groups or chains of banks has been an attempt to establish in effect an organization of banking that would render services to a community similar to those rendered by branch banks. In this connection it is interesting to note that in the South, chains and groups of banks organized and operating at the end of 1929 were in states that did not permit state-wide branch banking. States that restricted branches or prohibited them entirely were the areas in which chain and group banking systems were operating.

In discussing the problem of the small bank and the organization of southern banking before the Banking and Currency Committee of the House of Representatives in April, 1930, John K. Ottley of the First National Associates, a group banking company with its head office in Atlanta, Georgia, said:

Public confidence in the small independent bank has been greatly shaken in our section of the country. The system of banking with which the rural population had to deal has failed. . . . When strongly adverse economic conditions strike a local community in which there is a bank which serves that community alone it is next to impossible to prevent such a bank from failing. Successive periods of drought, the activity of fruit pest or of a plant disease, the adverse conditions of the market for a local product—such causes as these have brought about the downfall of hundreds of small banks in our [Atlanta Federal reserve] district. Such banks by virtue of their limited size and influence cannot possibly secure the type of management which modern banking demands, but even with good management the local bank under [these] conditions . . . would be virtually helpless. . . . Many of these banks failed because the community in which they operated failed.

Continuing, Mr. Ottley points out that the problem that confronts the small

bank lies in the narrow base upon which it rests. He says:

It cannot avail itself of the diversity of business which is essential to banking strength. Without such diversification it can only be a fair weather bank. If, therefore, we could throw behind every local bank in the district the strength and stability which come from diversified business in the entire district, bank failure from local causes would cease. The local bank itself cannot extend its business to top the great variety of enterprises embraced in the area. That contact it can gain by becoming a part of a group system of banks or a branch of a large parent bank.

Thus it appears that improvement in organization is greatly needed to strengthen the weaker units in the Southern banking system. Branch banking under careful supervision has been tested elsewhere in the United States and abroad with fairly satisfactory results and it has been suggested as a solution by national authorities. The organization of banks into chains and groups on the other hand often proceeds without the sanction of banking administrative authorities, and because of the nature of the legal arrangements under which organization is effected it is difficult if not impossible under present conditions to obtain adequate supervision over their operations after the group or chain has been developed.

It should be pointed out that in any event the organization of a number of banks together, regardless of the form that the organization takes, presents to the management many complicated and difficult problems that require much skill and experience. Developments of this kind must proceed slowly and carefully and must be directed along the lines of sound banking if the disastrous results recorded a few years ago in Georgia and Florida and more recently in Arkansas, Ten-

nessee, and Kentucky are to be avoided. The South's banking leadership was trained in a period of rising prices, gradual improvement in agriculture, and rapid growth in industry. To adjust the organization of the banking system to meet the problems that have developed in recent years under declining prices and adverse conditions is a difficult task, which must be undertaken vigorously but cautiously.

FEDERAL RESERVE SYSTEM IN THE SOUTH

A step in the strengthening of the southern banking system was the inauguration of the Federal Reserve System in 1913. The extent to which the Federal Reserve System serves the South was pointed out recently by the Governor of the Federal Reserve Board, who said:

In apportioning the country into Federal reserve districts, five out of the twelve Federal reserve banks were placed in the districts which serve the South either in whole or in part. Two of the Federal reserve banks, Richmond and Atlanta, serve districts lying entirely within southern territory, while practically all of the territory served by the St. Louis and Dallas banks and part of that served by Kansas City also falls within the Southern states. The reserve system also maintains 13 of its 25 branches in the Southern cities of Baltimore, Charlotte, Birmingham, Jacksonville, New Orleans, Nashville, Louisville, Memphis, Little Rock, Oklahoma City, San Antonio, El Paso, and Houston.⁶

The following table, which gives the percentage distribution of total loans and investments of all banks between member and non-member banks, indicates that the member banks represent about two thirds of the banking resources in each district except Richmond, where they represent more

than one half. The relatively smaller amount of loans and investments of member banks in the Richmond district is due largely to the fact that several large mutual savings banks in Baltimore, holding large amounts of investments, are included among all banks. These banks are not eligible for membership in the reserve system.

TABLE V—PERCENTAGE OF TOTAL LOANS AND INVESTMENTS HELD BY MEMBER AND NON-MEMBER BANKS IN SOUTHERN FEDERAL RESERVE DISTRICTS, JUNE 29, 1929

Federal Reserve District	All Banks	Member Banks	Non-Member Banks
Richmond....	100	52.7	47.3
Atlanta.....	100	67.3	32.7
Dallas.....	100	78.6	21.4
St. Louis.....	100	63.9	36.1

In different states the proportion of resources held by member and non-member banks varies considerably; but for the South as a whole, member banks constitute about thirty per cent of the total number of banks and hold from sixty to sixty-five per cent of total resources.

PROBLEM OF SOUTHERN RESERVE BANKS

When the reserve system was organized, each reserve bank was confronted with the task of adjusting its operations to the problems that were characteristic of its district and at the same time of accomplishing the purposes prescribed in the Federal Reserve Act. In the South when the banks were established, economic life of the region was predominantly agricultural, though manufacturing and mining were developing rapidly and becoming important. Financing agriculture and commerce dependent upon agriculture, however, was the most important task that confronted the banks and it was this

⁶ Crissinger, D. R., "Fifty Years of Banking in the South," *Manufacturers' Record*, Dec. 11, 1924.

problem that was of primary importance to the newly established reserve banks. As time has passed, the reserve banks have gradually adjusted their operations to the requirements of the region and have now become important parts of the South's banking and credit organization.

In centralizing reserves, providing an elastic currency, establishing a more efficient clearing and collection system, and bringing about a better banking organization the reserve banks have aided Southern member banks, and non-members to some extent, to meet their needs under ordinary conditions as well as in emergencies, in the same way that they have aided those in other sections of the country. These improvements have been described many times with reference to the country as a whole and need no explanation here with particular reference to the South. It is in connection with the financing of the credit and currency requirements of the South, which are characterized by wide seasonal changes, that the operations of the reserve banks are particularly important.

For the country as a whole, experience under the Federal Reserve System shows that changes in the total volume of borrowing at the reserve banks by member banks are brought about by changes in the demand for currency, in gold imports and exports, and in the reserve balances of the member banks at the reserve banks. In any one Federal reserve district, however, fluctuations in the volume of borrowing at the reserve bank are determined largely by the movement of funds from and to the district and changes in the demand for currency. To a certain extent the flow of funds to and from a given district is analogous to gold movements to and from the entire country, and affects borrowing

at the reserve bank in somewhat the same way.

A complete study of this problem for the South as a whole would require an analysis of the operations of the reserve bank in each district, and this would be a larger task than is necessary for our purpose here. In view of the general similarity of the economic organization in the different Southern Federal reserve districts, it will suffice to analyze the operations of only one of the reserve banks. The Richmond district, which includes the states of Maryland, Virginia, the greater part of West Virginia, North Carolina, South Carolina, and the District of Columbia, is characterized by many of the credit problems that are peculiar to the South as a whole, and a study of the operations of the reserve bank in that district with particular reference to the credit and currency requirements of that area will throw light on the problem of the other Southern reserve banks.

CAUSES OF BORROWING AT RESERVE BANK

The movement of funds from and to the Richmond district is largely in response to seasonal changes which characterize agricultural and industrial activity. Borrowing at the reserve bank is closely connected with it. In the spring and summer months, deposits are withdrawn by member banks' customers to make payments for goods and merchandise purchased to a considerable extent outside of the district. As this process continues, deposits are reduced to the point where reserves are depleted and borrowing at the reserve bank is necessary to build up and maintain the required funds. In the late summer just prior to the opening of the season for crop marketing, deposits are at their low point and borrowing at the reserve bank is usually at its high point. In the autumn as crops are

marketed and the flow of funds is reversed—to instead of *away from* the district—deposits increase rapidly and borrowing at the reserve bank is liquidated.

Currency necessary in the ordinary course of business in the district is supplied largely by the reserve bank, and changes in its volume are also important factors influencing borrowing at the reserve bank. Member banks are required to carry all of their reserves against deposits with the Federal reserve bank. It has become a fairly uniform practice with them to keep in their vaults only the amount of cash and currency that is necessary to meet the ordinary demands of trade from day to day. In order to meet an increased demand for currency arising from larger pay rolls or from a growth in the volume of retail trade, or to finance harvesting and marketing of crops, member banks apply to the reserve bank.

The extent to which the amount of currency changes during the year is reflected in the fluctuations in the amount of Federal reserve notes, which constitute a fairly large percentage of total currency in circulation. In the first six months of the year the quantity of Federal reserve notes declines continuously except during a few weeks in March and April when the spring volume of retail trade is large. In the autumn months it expands rapidly and reaches a high point during the Christmas trading season. In recent years the variation in the quantity of Federal reserve notes in circulation in the district has been from about \$25,000,000 to \$32,000,000 between the low point in midsummer and the high point in December. This indicates that the seasonal growth in the volume of business between midsummer and the end of the year requires an increase of thirty-five to forty per cent in the

amount of Federal reserve notes in circulation.

FLUCTUATIONS IN CURRENCY AND BORROWING AT RESERVE BANK

The effect that this currency fluctuation has on borrowing at the reserve bank is determined to some extent by the amount of balances carried by member banks with the reserve bank, or the amount carried with a correspondent, which can be transferred to the reserve bank. An increase in the demand for currency is first felt at the member banks, when customers withdraw deposits and increase their cash or "pocket money" to meet pay rolls, to make purchases at retail stores, or to finance harvesting and marketing of crops. To replenish their supply of cash the member banks usually draw upon balances at the reserve bank. If these balances are not available above the required reserve, they borrow from the reserve bank. On the other hand, in a season when the need for currency is not large, customers deposit their surplus cash with their respective banks and it is shipped back to the reserve bank and retired from circulation. This increases the balances of the member banks at the reserve bank, which may be used to liquidate outstanding indebtedness at the reserve bank.

Seasons in which the demand for currency increases in this district are almost exactly the opposite of those in which member banks make out-of-district payments. As a consequence of this inverse movement, the problem of financing the credit and currency requirements by the reserve bank is much less difficult than if the increased demand for currency coincided with the movement of funds away from the district. Currency flows back to the reserve bank rapidly after the opening of the year and the member banks use

it to liquidate indebtedness at the reserve bank and in February borrowing is usually at a low point. In the spring and early summer, currency continues with a slight interruption to flow back to the reserve bank and is used by the member banks to build up their reserves which are being drawn against at the same time because of the flow of funds from the district for spring purchases, as already described. This return of currency, however, is not sufficient to balance the loss of reserves, and member banks gradually increase their borrowings at the reserve bank.

Borrowing at the reserve bank continues to increase through the summer, but when crops begin to move to market, funds begin to flow to the district and borrowing at the reserve bank is reduced. However, just as this reverse movement begins, the demand for currency increases. The flow of funds to the district, nevertheless, is usually sufficiently large to enable member banks to pay off discounts with the reserve bank and to finance the growth in currency at the same time. It is also frequently large enough to enable the country banks to build up substantial balances with city correspondents.

DIFFERENCES IN LARGE AND SMALL FINANCIAL CENTERS

Although the total amount of reserve bank credit used by all member banks is thus determined by the movement of funds from and to the district and by the demand for currency, the problem of financing the member banks by the reserve bank differs between banks in the larger cities of the district and those in the smaller centers.

Flow of funds to the district in the early autumn results first in a growth in deposits. Banks in the smaller centers reflect this increase promptly and begin to repay their loans with

city correspondents and the Federal reserve bank, and to build up their balances. As a consequence of this, banks in the smaller cities usually have a large volume of deposits near the end of the year and their borrowings are at a minimum. Growth of bankers' balances at the larger city banks results in some increase in their deposits. This increase, however, is usually insufficient to meet the demand for currency that generally accompanies the expansion of retail trade in these cities in December, and member banks increase their borrowing at the reserve bank.

Immediately after the heavy retail trading season, currency returns to the member banks and is passed on to the reserve bank and used to pay off discounts. This flow of currency back to the reserve bank continues rapidly in the early weeks of January and by the end of the month the greater part of it has returned.

Fairly promptly after the opening of the year the movement of funds away from the district begins. Borrowing by member banks is necessary when reserves with the reserve bank are drawn down because of the transference of funds from the district by member bank depositors to make payments for merchandise purchases. In meeting this demand for funds for out-of-district payments, the smaller banks draw against their balances with correspondents, and as a result the large banks lose reserves rapidly very early in the year. Borrowing at the reserve bank by the larger banks follows very quickly after the reduction in reserves and continues to increase in February and March at a much faster rate than that of the smaller banks.

As the season advances and balances at the city banks are thus reduced, the smaller member banks turn to the reserve bank. Borrowing by these

banks is usually in large volume until the late summer and early autumn months. Early in the crop-moving season, funds are used by the member banks to liquidate their indebtedness to the reserve bank, and as the season progresses balances are again built up with the city correspondents. This course of events is that which is usually observed when crops are marketed without interruption; but when prices are low and the returns are not sufficient to enable the producers to liquidate indebtedness, member banks continue to discount heavily at the reserve bank. Non-member banks continue to borrow in large volume from city correspondents, while the latter borrow from the reserve bank.

DISCOUNT AND CREDIT PRACTICE OF RESERVE BANKS

In the development of their discount policies at the beginning of the system and in the practice that has been followed since, the Federal reserve banks in the South have been concerned with two main problems: (1) that of adjusting their discount operations to the usual course of business in their respective districts, and (2) that of coördinating their credit policies with the policy of the entire Federal Reserve System.

A clear distinction, however, cannot be made between these problems. Conditions giving rise to a particular credit situation in an individual district, other than those due to seasonal influences, are frequently the result of conditions that are characteristic of the country as a whole, and the practice of the individual reserve bank is not different from that of reserve banks in other districts. Generally, the practice followed by the different reserve banks in adjusting their operations to the credit situation for the entire country is reflected in the open market

operations which are carried out in conjunction with the open market policy of the reserve system as a whole. It is in connection with discounts for member banks that the reserve banks come in close contact with the banking and credit situation in the respective districts; and through the exercise of control over the volume of discounts for member banks, the reserve banks influence the credit situation in their districts.

It has been shown that the demand for reserve bank credit in the Richmond district is determined in a large measure by the flow of funds to and from the district and the currency requirements of the community. These factors, in turn, are determined largely by the seasonal variations in the activity of industry and trade and the habits of the community in the use of currency. In developing its discount policy the reserve bank has found it necessary to give careful consideration to all of these factors. In extending credit to an individual bank, however, the discount policy of the reserve bank is supplemented by an analysis of the condition of the bank presenting the paper. Particular conditions, moreover, which characterize the operation of banks in the larger centers and those in the rural sections frequently cause some variation in the practice of the reserve bank in discounting for different classes of banks.

DISCOUNTS FOR BANKS IN LARGER CENTERS

In the larger centers of the district, rates charged by member banks to customers are usually lower than those charged in the smaller cities and towns; and the margin between these rates and the discount rate at the reserve bank is less than in the smaller centers. Furthermore, the use of a larger proportion of their funds in loans on

securities than is the case with banks in the smaller centers, brings the banks in the larger cities in closer connection with the national security markets and makes them points of contact for the district with the larger money markets of the country.

Partly as a result of this connection with the leading financial centers, banks in the larger cities of the district respond more quickly to changes in the banking and credit situation of the country as a whole than do banks in the smaller centers. They are also more responsive to changes in credit conditions affecting the entire district and to the discount rate at the reserve bank.

Factors which play a significant rôle at the larger banks in determining the necessity for borrowing, include changes in the volume of loans and investments, types of loans and investments held, and the course of deposits, particularly bankers' balances. It has been pointed out that loans are subject to seasonal changes, but the effect of a seasonal change in loans is sometimes partly offset by an adjustment in the holdings of investments, acceptances, or commercial paper. The extent, however, to which banks shift their holdings of investments to meet a change in the demand for loans is determined partly by conditions prevailing in the security markets and the relation between security yields and discount and interest rates.

These factors differentiate the problem of discounting for banks in the larger cities of the district from that of discounting for banks in the smaller centers and, as a result, it is a problem of the reserve bank in determining its credit policy to follow closely current developments in the financial centers and to keep in close touch with the seasonal movements of trade, industry, and credit.

DISCOUNTS FOR BANKS IN SMALLER CITIES

Borrowing by smaller banks at the reserve bank, as has been shown, arises most frequently from conditions which are seasonal in character and are beyond the control of the member bank. A relatively large proportion of the assets of these banks represents loans to customers, and the problem of financing the growth in the demand for loans cannot be solved, as in the case of the larger banks in the cities, by adjusting investment and commercial paper holdings. Furthermore, the wide differential between rates charged to customers and the discount rate at the reserve bank makes the latter a less influential factor in the regulation of the volume of borrowing by banks in the smaller centers. Other instruments for such regulation are necessary.

The reserve bank, therefore, in passing upon the loan applications of a member bank, considers not only the legal eligibility and the soundness of the paper presented for rediscount or as collateral for an advance, but also the general position of the borrowing bank. It also considers the volume and the character of the bank's outstanding loans and investments, and to some extent the character of its management. The reserve bank, in addition, takes into consideration at all times the general credit situation in the district, with a view to regulating the volume of reserve bank credit in the best interest of the entire community. In applying these rules to a particular member bank, the reserve bank also considers the season at which the bank has found it necessary to borrow in previous years, its record of borrowing in the past, its loan and investment policy, the course of its deposits, and the amount of balances carried with correspondents.

VALUE OF RESERVE BANKS TO THE SOUTH

In thus adjusting their operations to the local banking and credit problems, the Richmond reserve bank and others have become an integral part of the South's banking machinery. Through them the resources of many widely distributed banks have been organized and brought under the control of a central agency for the use of the entire community. Also, the relation of the reserve banks in the South to those in other districts links the organized resources of that region with those of other sections and thereby strengthens the banking system of the country as a whole.

In aiding the member banks to finance the seasonal movements of

funds *to and from* the South and the region's currency requirements, the reserve banks have met one of the most important problems that has always confronted Southern banks; and in the future, as the seasonal requirements for credit and currency vary in response to the demands of growing industries and agricultural changes, the banks with the aid of reserve banks will be in a position to meet them easily.

However, reshaping the structure of banking in the South and adjusting operations to the economic changes that are rapidly taking place are more complex and difficult problems. Their solution will require the conscious evaluation of basic facts and the co-operation of national and local banking leadership.

Industrial Changes and Taxation Problems in the Southern States¹

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FOR particular purposes the "South" may be variously defined. In this paper it has seemed best to define it as that part of the United States lying south of the Mason-Dixon line, the Ohio River, and the southern boundaries of Missouri and Kansas. This definition is adopted not so much on account of the industrial kinship of these several states—though they have much in common—but rather on the ground that any other border line, aside from the violence it might do to history, would leave outside the group some states with more or less definitely southern tax problems. As it is, Maryland, for example, is a doubtful case and is excluded on historical rather than logical grounds.

The method of attack adopted shows by samples the facts regarding southern industrialization, and then compares five specimen contemporaneous tax movements. The tax trends selected for comparison have been chosen as the five most significant current tendencies which lend themselves to measurement. Improvement of tax administration, for instance, while perhaps as important as some of the tendencies analyzed, is exceedingly difficult to measure objectively.

THE SOUTHERN INDUSTRIAL MOVEMENT

Table I gives some indication of the southward shifts in industry which

have occurred within the past few years. Careful analysis of this table indicates that, while a number of states have not made marked progress, most of them have done so during the past ten years. For instance, Kentucky, which actually lost ground when the liquor manufacturing business was destroyed between 1914 and 1919, has shown fairly satisfactory growth since that time. A study of the column of totals for the South shows a consistent gain—a growth slightly more rapid in the last decade than that shown by states outside the South.

Essentially the same movement in coal mining is shown by Table II, in spite of the fact that some of the Southern states show declines. Part of the growth in Southern states since 1919 apparently arises from relatively more favorable conditions than those formerly enjoyed, as evidenced by the check that occurred when the differentials were changed in the opposite direction after 1927. Another consideration is found in the unfavorable production situation in the Central Competitive Field, growing out of the Jacksonville Agreement during the years prior to 1928. Study of the table makes it clear that the decline in production in Kentucky and West Virginia particularly, since 1927 has been accompanied by a reduction in the decrease in output in the Central Competitive Field. Due apparently to a distinctly lowered intrastate freight rate and to favorable conditions common to the other Central states, Illinois has shown an absolute in-

¹ Assistance from the staff of the Bureau of Business Research, College of Commerce, University of Kentucky, in the preparation of this paper is gratefully acknowledged.

TABLE I—GROWTH OF MANUFACTURING IN THE SOUTH AS COMPARED WITH THE STATES OUTSIDE THE SOUTH, 1904-1927 INCLUSIVE *

Year	Alabama	Arkansas	Florida	Georgia	Kentucky	Louisiana	Mississippi	North Carolina
1904.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1909.....	117.1	135.4	150.8	118.6	121.7	131.2	142.5	148.3
1914.....	135.7	132.5	156.5	129.2	125.1	137.7	130.9	183.1
1919.....	187.7	161.4	212.2	161.7	120.0	169.4	158.8	236.0
1923.....	213.7	150.5	206.2	177.5	140.4	174.4	155.9	239.5
1925.....	226.3	148.1	232.7	193.4	143.5	174.7	167.2	322.8
1927.....	242.4	138.2	238.0	209.4	153.4	165.8	162.1	370.8

Year	Oklahoma	South Carolina	Tennessee	Texas	Virginia	West Virginia	All Southern States	All Other States
1904.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1909.....	234.5	132.0	124.4	150.3	138.1	146.7	133.9	123.9
1914.....	232.2	141.8	137.7	170.3	150.8	175.3	147.5	141.9
1919.....	522.4	180.4	170.6	238.4	184.4	209.0	184.3	186.8
1923.....	528.8	208.1	203.4	270.4	189.6	243.2	204.7	206.9
1925.....	569.6	208.7	217.4	300.2	198.2	255.2	218.5	208.5
1927.....	625.3	238.7	236.9	319.0	226.3	263.3	233.9	220.8

* The figures shown are index numbers derived from the censuses of manufacturing reported by the Department of Commerce. The index is computed from (1) average number of wage earners employed, weighted 2; (2) primary horse power installed, weighted 1; and (3) value added by manufacture (corrected by an index of wholesale prices derived from the Bureau of Labor Statistics general index by eliminating the agricultural and fuel and power items), weighted 1.

crease in output since 1927. But after all these modifications in the trend are observed, it is obvious that over a period of ten years the Southern states have shown a trend upward and that the other states as a whole have shown a decline.²

TAX EXEMPTION FOR THE ATTRACTION OF INDUSTRY

Table III shows the result of a survey of the movement toward tax exemption in the several states as reported from

² Cf. Pearce, Albert, *Growth and Overdevelopment of the Kentucky Coal Industry* (forthcoming), Bureau of Business Research, University of Kentucky.

time to time in the "Review of Tax Legislation" published annually in the proceedings of the National Tax Conferences held under the auspices of the National Tax Association.³ The completeness of the data cannot be guaranteed, but there is certainly no selection by sections; consequently the sample is a fair one, even if it does not embrace every case.

Study of the table shows that all the general laws providing for tax exemption as an inducement to establishment of manufacturing plants are confined to

³ Especial thanks are expressed to Miss Beulah Bailey, who has kindly made available the 1930 review in advance of publication.

TABLE II—OUTPUT OF BITUMINOUS COAL IN SOUTHERN STATES AS COMPARED WITH PRODUCTION IN OTHER PARTS OF THE UNITED STATES,
1904-1928 INCLUSIVE *
(In thousands of tons)

Year	Alabama	Arkansas	Georgia	Kentucky	North Carolina	Oklahoma	Tennessee	Texas	Virginia	West Virginia	Total 10 Southern States	Total States Not in South
1904.....	11,262	2,009	383	7,576	7	3,047	4,782	1,196	3,411	32,407	66,080	212,384
1905.....	11,866	1,955	352	8,433	2	2,924	5,767	1,201	4,275	37,792	74,547	240,321
1906.....	13,108	1,864	332	9,654	..	2,860	6,259	1,313	4,255	43,290	82,985	259,893
1907.....	14,250	2,670	362	10,753	..	3,643	6,810	1,648	4,711	48,092	92,989	301,717
1908.....	11,605	2,078	265	10,247	..	2,948	6,199	1,895	4,259	41,898	81,394	251,088
1909.....	13,703	2,377	211	10,697	..	3,119	6,369	1,824	4,752	51,949	94,891	284,711
1910.....	16,111	1,906	177	14,623	..	2,646	7,121	1,892	6,508	61,671	112,655	304,370
1911.....	15,021	2,107	165	14,050	..	3,074	6,433	1,975	6,865	59,392	109,522	296,325
1912.....	16,101	2,101	223	16,491	..	3,675	6,473	2,139	7,947	66,787	121,892	328,158
1913.....	17,679	2,234	256	19,617	..	4,166	6,860	2,429	8,323	71,254	133,323	345,029
1914.....	15,593	1,837	166	20,383	..	3,989	5,943	2,324	7,960	71,708	129,905	292,725
1915.....	14,928	1,652	134	21,362	..	3,694	5,750	2,089	8,123	77,184	134,896	307,666
1916.....	18,086	1,995	174	25,394	..	3,608	6,137	1,988	9,707	86,460	153,549	348,898
1917.....	20,068	2,144	119	27,808	..	4,387	6,194	2,356	10,087	86,442	159,605	392,091
1918.....	19,185	2,227	67	31,613	1	4,813	6,831	2,261	10,290	89,936	167,224	412,060
1919.....	15,537	1,429	53	30,036	7	3,802	5,213	1,681	9,327	79,037	146,122	319,639
1920.....	16,294	2,104	50	35,691	12	4,849	6,662	1,615	11,379	89,971	168,627	399,943
1921.....	12,569	1,228	34	31,588	23	3,963	4,460	972	7,492	72,787	134,516	281,846
1922.....	18,325	1,110	61	42,134	79	2,803	4,877	1,106	10,491	80,488	161,474	261,245
1923.....	20,458	1,297	76	44,777	36	2,885	6,040	1,187	11,762	107,900	196,418	367,995
1924.....	19,130	1,452	75	45,147	57	2,330	4,557	1,147	10,693	101,663	186,251	297,307
1925.....	20,004	1,220	66	55,069	65	2,326	5,454	1,008	12,380	122,380	220,391	299,550
1926.....	21,001	1,459	60	62,924	58	2,843	5,789	1,091	14,133	143,509	252,867	320,379
1927.....	19,766	1,549	77	69,124	53	3,818	5,783	1,326	12,916	145,122	259,534	258,081
1928.....	17,621	1,661	58	61,860	61	3,501	5,611	1,182	11,901	132,952	236,408	264,169

* From *Mineral Resources of the United States*, Part II, for various years. Statistics are incomplete to the extent that states shown some years in the "miscellaneous" group are entirely excluded in order to make statistics in all years comparable.

the South and that more statutes have been enacted in the fourteen Southern states than in all the remaining thirty-four. Indeed, the table fails to show all the legislation in the Southern states, since in some states—Mississippi, for example—the results of several statutes are shown in one place.

Certain statutory provisions recently enacted are of particular interest.

manufacturers at only the state rate, thus providing permanent exemption from local taxes. This appears to be the most extreme provision found in any state, North or South. The only temporary exemption provision in any of the states shown in the table not having a marked tendency to interfere with fair competition seems to be that in Virginia. The law in Virginia refers

TABLE III—MOVEMENT FOR EXEMPTION OF MANUFACTURERS FROM TAXATION

State	Date	Character of Exemption
<i>Southern States</i>		
Arkansas.....	1929	Textile plants exempt from all property taxation for 7 years from establishment.
Georgia.....	1925	Specified classes of manufacturing exempt from county, school, or municipal taxes if voted by majority.
Kentucky.....	1917	Machinery, raw material, and inventory of manufacture exempt from all local property taxes. (Municipalities may provide complete exemption under older statutes.)
Louisiana.....	1930	Proposed amendment providing optional local exemption, before voters November, 1930.
Mississippi.....	1922	Specified industries exempt from local taxation on tangible property for 5 years. Other classes specified 1926.
South Carolina.....	1927	Textile manufacturing in specified counties exempt from county taxes except for schools for 5 years.
	1930	All manufacturing exempt from county taxes in certain counties for 5 years. Does not apply to school taxes nor at all to small enterprises.
Virginia.....	1930	Local units may exempt new <i>kinds</i> of concerns for 5 years.
<i>Not in South</i>		
Maryland.....	1927	Certain industries exempt in specified counties.
New Hampshire.....	1927	City or town may by two-thirds vote offer 5-year exemption to any manufacturing enterprise—subject to 5-year extension.
Rhode Island.....	1926	Woonsocket may exempt for 10 years manufacturing property of concern locating because of such exemption.

A decade ago, except in Kentucky, states which offered factories tax exemption generally provided a tax-free period of five years; more recently there appears to be a tendency to increase that time. The exemption provisions in Kentucky antedate the World War, but in 1917 a general statute was passed providing for taxation of the machinery and inventory of

only to manufacturing enterprises which are not in competition with existing factories. It will no doubt raise question as to the definition of "competition with existing plants."

STATE EXCISES ON PARTICULAR COMMODITIES OR SERVICES

Prior to the World War, only the Federal Government, with rare ex-

TABLE IV—STATE RECEIPTS FROM EXCISE TAXES, 1922-1930^a
(In thousands of dollars)

State	Commodities Taxed and Date When Originally Imposed	1922	1923	1924	1925	1926	1927	1928	1929	1930
<i>Southern States</i>										
Alabama ^b	Tobacco (1927), lubricating oils (1927)	.....	.....	.....	.....	.....	.....	1,133	1,492	1,474
Arkansas ^c	Tobacco (1926)	.....	.....	.....	.....	718	489	906	900 ^d	.....
Georgia.....	Tobacco (1924), kerosene (1927)	.....	.....	702 ^e	730 ^f	718 ^g	926 ^h	966 ^b	1,023 ^b	.....
Louisiana ⁱ	Kerosene (4 months 1926)	.....	.....	.....	.....	84	229	238	212	.....
South Carolina ^j	Tobacco (1923), soft drinks (1925), documentary (1924), admissions (1923)	.....	748	837	2,513	2,410	3,074	3,621	3,833	.....
Tennessee ^k	Coal oil (1925), tobacco (part 1925), malt (1929), carbonic acid gas (1929)	.....	.....	470	996	1,590	1,747	2,053	2,285	.....
Total for Southern States.....		.....	748	2,009	4,239	5,515	6,465	8,917	9,745	.....
<i>Other States</i>										
Connecticut ^l	Amusements and admissions (1922)	134	244	289	139	12	191	204	167	140
Iowa ^m	Tobacco (1922).....	593	641	700	777	828	903	1,183 ⁿ	1,326 ⁿ	.....
Kansas ^o	Tobacco (1928)	.....	.....	.....	.....	.....	.....	689	698	682
Michigan ^p	Boxing and wrestling (1925), malt (1930)	.....	.....	.....	21	13	54	96	1,109 ^q	.....
Montana ^r	Boxing receipts (1924)	.....	.....	3	3	3	3	3	3	3
New Jersey ^s	Boxing and wrestling (Earlier)	62	89	104	60	60	47	63	102	.....
New York ^t	Boxing receipts (1922. License earlier)	164	179	232	168	198	220	260	200	.....
North Dakota ^u	Tobacco (1925)	.....	.....	.....	57	270	263	366	350 ^v	326 ^v
Pennsylvania ^w	Boxing and wrestling (1927) and private banker's gross receipts (Earlier)	42	46	44	40	62	97 ^x	107 ^x	113 ^x	.....
South Dakota ^y	Tobacco (1924), malt (1930)	.....	.....	202	209	317	276	362	406	485
Utah ^z	Tobacco (1923), oleomargarine (1929)	.....	78	105	118	130	130	133 ^{aa}	202 ^{bb}	.....
Total for other States.....		995	1,277	1,679	1,592	1,893	2,184	3,466	4,676	.....
Grand Total.....		995	2,025	3,688	5,831	7,408	8,649	12,383	14,421	.....

^a Calendar-year statistics are shown where possible; in some cases data are for fiscal years not coterminous with calendar years.

^b Letter from State Tax Commission. Taxes in effect only 9 months in 1928.

^c Martin, "The Proposed Consumption Taxes," University of Kentucky.

^d Estimated.

^e Report of the Department of Revenue of Georgia, 1925-1926.

^f Report of the Department of Revenue of Georgia, 1924-1925.

^g Report of the Department of Revenue of Georgia, 1926-1927.

^h Letter from administrative official.

ⁱ Letter from administrative official.

^j Letter from South Carolina Tax Commission, "Table Showing Gross Tax Collections, 1922-1929."

^k Tennessee, Condensed Financial Statement of Receipts and Disbursements for six fiscal years ending June 30, 1924-1929, p. 7.

^l Connecticut, "Abstract from Treasurer's Report, 1930. Comparative Statement of Cash Receipts and Payments."

^m Martin, *loc. cit.*

ⁿ Letter from administrative official.

^o Letter from administrative official.

^p Fifth Annual Report of Michigan Athletic Board of Control, 1926-1928, p. 5.

^q Tax on malt for fiscal year ending June 30, 1930, is added to boxing tax for 1929. Amount of malt tax revenue is \$990,762.69. Letter from administrative official.

^r Letter from administrative official.

^s Letter from administrative official. In addition to the figures shown, there were receipts from New Jersey of 67 thousand dollars in 1920, and 171 thousand dollars in 1921.

^t Letter from administrative official.

^u Part year 1925. Ninth Biennial Report of State Tax Commissioner, appendix, Table VII.

^v Letter from administrative official.

^w Final Report of Pennsylvania Tax Commission, 1927, p. 80.

^x Pennsylvania, State Governmental Budget System and Its Place in the Present Fiscal Structure, Sept., 1930, p. 42.

^y Letter from administrative official.

^z Law in effect only 7½ months in 1923. Martin, *op. cit.*

^{aa} Figure obtained by subtracting receipts for 1927 from receipts for two years ending 1928. Utah, Biennial Report of State Treasurer, 1927-1928, p. 10.

^{bb} Letter from administrative official.

ceptions, imposed excise taxes on commodities. Since the war, and more particularly since 1922, the states have shown a decided tendency toward taxing the sale of particular commodities or services. The most important state tax of this character is that imposed on motor fuels; but, since it is levied as a special highway tax rather than as a general revenue measure, it can more logically be treated in connection with motor-vehicle taxes.⁴ The second most popular measure is the excise on manufactured tobacco, especially cigarettes, but a number of other commod-

South Carolina have enacted new malt taxes, though in Louisiana the new law is designed to replace a 1928 statute, the exact revenue yield of which is not known. As shown by the gradual climb in the grand total of revenue produced by such special excises (Table IV), the tobacco and other sales taxes have shown almost constant growth since 1920.

It is interesting to note from Table IV that these special sales taxes not only produce decidedly more revenue in Southern than in other states, but that, as shown in Table V, they

TABLE V—TOTAL STATE REVENUE RECEIPTS COMPARED WITH SPECIFIED CLASSES OF TAX REVENUES, 1928

(In thousands of dollars)

Aggregate of	I Total State Revenues ^a	II Special Ex- cises ^b	III Ratio of II to I Per cent	IV Gross Sales Taxes ^c	V Ratio of IV to I Per cent	VI Motor License and Gas Taxes ^d	VII Ratio of VI to I Per cent	VIII Income Taxes ^e	IX Ratio of VIII to I Per cent
Southern States...	466,591	8,917	1.9	5,173	1.1	180,930	38.8	18,995	4.1
Outside Southern States.....	1,468,841	3,466	0.2	3,777	0.3	466,572	30.4	151,006	10.3

^a Computed from Census Bureau, *Financial Statistics of State Governments: 1928*, preliminary edition, p. 4.

^b From Table IV.

^c From Table VI.

^d Computed from reports of state officials to the United States Bureau of Public Roads.

^e From Table IX.

ities and services are now bearing such taxes.

Examination of Table IV discloses that legislation imposing such special excises, particularly on tobacco, began to be of considerable importance as early as 1922 and has continued to be enacted since that time. Indeed, in 1930, three states, Michigan, Mississippi, and New Mexico, passed such tax laws.⁵ During 1930, Louisiana and

are responsible in the South for an even more significant proportion of total state revenue receipts. Table IV shows, too, that six of the fourteen Southern states have such imposts, while only eleven of the remaining thirty-four states have them. Included in the eleven also are five states which raise \$200,000 or less annually. Had such gross production or severance taxes as those levied in Oklahoma, Pennsylvania, Texas, and West Virginia been included in this category, the Southern character of the movement would have been even clearer than it is. Thus it may be said that

⁴ See p. 231.

⁵ Bailey, "Tax Legislation in 1930," *Tax Digest*, Oct., 1930, p. 351. The referendum has been invoked in Michigan and New Mexico, so that the statutes have not become effective.

the trend is most largely Southern, whether it be considered from the point of view of amount of legislation, budgetary significance for particular commonwealths, total revenue produced, or relationship to aggregate state revenues.

GENERAL SALES TAXES

Closely related to the tendency toward the imposition of special ex-

is thus far confined to the six states listed in Table VI, but it is of interest that half of these states passed their laws in 1929 or 1930. The Georgia law was effective during the fourth quarter of 1929, and the Kentucky and Mississippi laws were passed during 1930. On the other hand, the Pennsylvania act is an old one and the West Virginia law has been effective since 1922.

TABLE VI—REVENUE FROM GROSS SALES TAXES, 1922-1930

(In thousands of dollars)

	1922	1923	1924	1925	1926	1927	1928	1929	1930
<i>Southern States</i>									
Georgia ^a.....	....	....	....	....	....	....	....	Effective 3 mo.	936
Kentucky.....	....	....	....	....	....	....	....	Not effective	...
Mississippi.....	....	....	....	....	....	....	....	Not effective	...
Virginia ^b.....	....	....	....	....	1,284	1,296	1,368	1,416	...
West Virginia ^c	1,462	2,708	3,056	2,551	3,159	4,076	3,805	....	...
Total for Southern States.....	1,462	2,708	3,056	2,551	4,443	5,372	5,173	1,416	936
Pennsylvania ^d	3,102	3,424	2,942	3,582	3,544	4,269 ^e	3,777 ^e	3,625 ^e	...
Grand Total.....	4,564	6,132	5,998	6,133	7,987	9,641	8,950	5,041	936

^a Letter from administrative official. Figure shows receipts for last quarter of 1929 and first two quarters of 1930.

^b Virginia, reports of the department of taxation.

^c West Virginia, reports of the state tax commissioner, 1927-1928, p. xv.

^d *Final Report of the Pennsylvania Tax Commission, 1927*, p. 81. In addition to the figures shown, Pennsylvania received in 1918, 1,815 thousand dollars.

^e Pennsylvania, *State Governmental Budget System and Its Place in the Present Fiscal Structure*, September, 1930, p. 43.

cises on so-called "luxuries" is that in the direction of taxes on the sale of commodities in general. In no states are there turnover taxes similar to those found in European countries, but a number of gross sales taxes have been designed to secure somewhat the same result. Such legislation, in general,⁶

⁶ It is hard to define lines sharply. In the unincorporated business tax in Connecticut and in the merchants' license tax in Delaware we find a somewhat similar form of tax, though the amount

It is noticeable, again, that in this field, five of the six states having effective sales tax laws of fairly general application are in the South. While the revenue thus produced in 1929 in the Southern states was scarcely twice as much as that in the single State of Pennsylvania, it is to be expected that 1930 will witness a material increase in the revenue differential. Moreover, of money raised is almost negligible. Licenses in Southern states are also related.

even in 1928, when only two Southern states had effective general sales tax laws, Table V shows that the revenue constituted more than one per cent of the aggregate state revenue receipts of the Southern states, as compared with less than one-third that percentage in other states. It appears, then, that from any point of view, effective movement toward general sales taxes since the World War has been exclusively Southern.

SPECIAL MOTOR-VEHICLE TAXES

The special taxation for highway purposes of motor-vehicle users is a phenomenon of recent development, as shown in Table VII. The total revenue

TABLE VII—DEVELOPMENT OF MOTOR-REGISTRATION AND GASOLINE TAXATION, 1904-1929 *

(In thousands of dollars)

Year	Registration Tax Revenues	Gasoline Tax Revenues	Total Special Revenues
1904.....	50 ^b	....	50
1914.....	12,382	....	12,382
1918.....	51,477	....	51,477
1921.....	122,479	5,302	127,781
1926.....	288,282	187,603	475,885
1927.....	301,061	258,839	559,900
1928.....	322,630	304,872	627,502
1929.....	347,844	431,312	779,156

* As reported by state officials to the Bureau of Public Roads.

^b Estimated on basis of statistics of collections in New York and Massachusetts.

from this source at the end of the World War aggregated only about fifty million dollars, whereas at the present time it is well over three quarters of a billion. Until after the war the registration license was a police measure, and revenue produced was incidental to the primary purpose of

the license. Beginning about 1920 there has been a substantial increase year by year in revenue from this source. This is largely the result of increasing use of motor vehicles, though there has been a gradual rise in the registration tax imposed on the average car.

But the history of the gasoline tax is even more meteoric. The tax was first imposed in 1919 in only three states. The revenues have increased, as shown in the table, until in 1930 almost half a billion dollars may be expected from forty-eight states and the District of Columbia. Here again the increase may be ascribed in part to greater use of motor vehicles; but most of it must be accounted for by higher rates, and, of course, the spread of the tax. By 1929 every state and the District of Columbia had a liquid-fuels tax. The rates ranged from two cents to six cents.

Although the motor-tax movement is beyond question national in scope—or more properly world-wide—examination of Table VIII⁷ discloses that the Southern states have again gone farther than others in their use of these revenue devices. It is true, as shown in the table, that none of the Southern states have extremely high average registration-tax rates, the highest being that in Arkansas. But neither do any of the states below the Mason-Dixon line have such very low rates as are to be found, for example, in Arizona, California, or the District of Columbia. So the average in the Southern states is well above that for the country as a whole, and consequently much above that for the states outside the South.

But the differential is even larger in the case of the gasoline tax. No state outside the South imposes a six-cent rate, and comparatively few levy a

⁷ Computed from data reported to the Bureau of Public Roads by state officials, *Public Roads*, pp. 36-39, April, 1930.

TABLE VIII—REVENUE FROM GASOLINE AND MOTOR-REGISTRATION TAXES PER MOTOR VEHICLE IN THE SOUTH COMPARED WITH OTHER STATES, 1929

	Gasoline Tax per Motor Vehicle	Registra- tion Tax per Motor Vehicle	Total Special Tax per Motor Vehicle
<i>Southern States</i>			
Alabama	\$24.84	\$13.07	\$37.91
Arkansas	28.67	18.08	46.75
Florida	35.27	17.51	52.78
Georgia	28.48	12.72	41.20
Kentucky	23.25	16.16	39.41
Louisiana	24.84	16.10	40.94
Mississippi	28.18	11.85	40.03
North Carolina	25.86	14.56	40.42
Oklahoma	20.79	12.20	32.99
South Carolina	29.85	12.01	41.86
Tennessee	25.67	11.85	37.52
Texas	17.21	15.15	32.36
Virginia	27.21	15.88	43.09
West Virginia	18.86	16.97	35.83
Southern States	23.36	14.36	37.72
<i>Other States</i>			
Arizona	23.49	6.87	30.36
California	17.32	5.36	22.68
Colorado	17.22	6.06	23.28
Connecticut...	12.34	24.37	36.71
Delaware	17.02	20.42	37.44
District of Co- lumbia	9.52	4.41	13.94
Idaho	16.49	15.14	31.63
Illinois	7.22	10.58	17.80
Indiana	18.00	7.21	25.21
Iowa	11.93	16.61	28.53
Kansas	14.06	9.81	23.87
Maine	20.05	16.38	36.43
Maryland	19.68	10.30	29.98
Massachusetts	11.93	8.70	20.63
Michigan	15.28	16.64	31.92
Minnesota	12.18	14.86	29.96
Missouri	10.15	12.82	22.97
Montana	26.91	11.06	37.97

	Gasoline Tax per Motor Vehicle	Registra- tion Tax per Motor Vehicle	Total Special Tax per Motor Vehicle
Nebraska	\$18.66	\$12.68	\$31.34
Nevada	22.28	9.28	31.56
New Hamp- shire	21.40	20.62	42.02
New Jersey ...	11.97	17.91	29.88
New Mexico ...	29.15	9.71	38.86
New York	8.62	16.93	25.55
North Dakota	15.85	10.50	26.43
Ohio	25.94	7.28	33.22
Oregon	22.26	28.42	50.68
Pennsylvania	20.71	16.88	37.59
Rhode Island..	11.62	17.94	29.56
South Dakota	22.94	15.45	38.39
Utah	17.51	7.42	24.93
Vermont	18.32	25.16	43.48
Washington...	14.62	17.07	31.69
Wisconsin	9.99	14.84	24.83
Wyoming	21.25	10.61	31.86
Other States ..	14.32	12.78	27.10
United States	16.28	13.13	29.41

five-cent rate. Quantitatively stated, nine of the fourteen Southern states impose either a five- or a six-cent rate, while only two of the thirty-five others—if the District of Columbia may be counted—have rates as high as five cents. None of the Southern states has a rate below four cents a gallon, while nineteen of the remaining thirty-five have rates below this level, eight at two cents, ten at three cents, and one at three-and-a-half cents.

Again, although the difference is not so marked, it appears from data recently made public⁸ that special motor-

⁸"Some Problems of Motor Vehicle Taxation," report of the Committee on Motor Vehicle and Related Taxes of the National Tax Association to the annual National Tax Conference, Kansas City, October 21, 1930, Table III.

tax revenues occupy a slightly larger place in the highway budgets of the Southern than of other states. The expenditures for highways, in relation to the number of motor vehicles, are higher in the South than elsewhere; but even so, the motor-tax revenues bulk large as compared with those collected in the states of the North and the West. As shown in Table V, also, the special motor-tax revenues constitute a larger percentage of total state revenue receipts in Southern than in other states.

STATE INCOME TAXES

It is common belief that the most promising general revenue measure available for relief from the property tax burden is the income tax. If this be the case it will be of special significance to find out what the Southern states have been doing with income taxation in the years since the development of the industrialization movement.

Examination of Table IX discloses that over 57 per cent of the fourteen Southern states have passed income tax laws, while only about 35 per cent of the other states have done so. Six of the Southern and eight of the other states had laws effective in 1923. The six Southern states raised in 1923 about eight million, and five years later nineteen million dollars by this means; whereas the eight states outside the South secured thus in 1923 nearly eighty-six million and in 1928 one hundred and fifty million dollars. In other words, in the five years following 1923, income tax revenues in the South increased more than 137 per cent, and in the remainder of the country about 75 per cent.

On the other hand, the *amount* of revenue produced by state income taxes below the Mason-Dixon line is very much less than that derived in states of the North and the West. It

is less for the average state, and, as shown in Table V, decidedly less in relation to total state revenue receipts. The reason is not that rates are generally lower in Southern states, that initial exemptions are more generous, nor that administration is less efficient. It results primarily from (1) the lower per capita wealth and probably more even distribution in the South, and (2) the position of certain states outside the South as creditor communities.

To illustrate, Delaware, with the same exemptions as Virginia but with rates that are lower and less steeply graduated, secured by the individual income tax in 1929 more than thirteen times as much revenue per capita; that is, \$9.80 as compared with \$0.75. New York, with exemptions nearly twice as high and with brackets ten to forty times as large as Virginia's, secures about \$7.25 a person from the individual income tax. Consequently it may be said that the economic situation, rather than legislative policy, explains the relative fiscal inadequacy of the income tax in the South.

THE SOUTHERN INDUSTRIAL MOVEMENT AND TAXATION

It has been shown that a clear-cut industrialization movement throughout the South, except perhaps in Arkansas, Louisiana, and Mississippi, has been evident since the World War; that it has resulted in a rate of gain between 1919 and 1927 which, in spite of the losses occurring in one or two states, has exceeded materially the rate of growth enjoyed by the remainder of the United States; and that, at the same time, the South has most rapidly utilized five of the most important contemporary tax developments.

It is not possible on the basis of evidence adduced, or perhaps on any other ground, to show conclusively that the industrialization movement has *caused*

TABLE IX—STATE RECEIPTS FROM TAXES ON INCOME, 1918–1930*
(In thousands of dollars)

State	1918	1922	1923	1924	1925	1926	1927	1928	1929	1930
Southern States										
Arkansas									Not effective	
Georgia ^b									Not effective	600
Mississippi	50 ^c	42 ^d	29 ^d	110 ^d	642 ^d	1,789 ^d	1,864 ^d	1,437 ^d	1,500 ^d	
North Carolina ^e		2,234	3,577	4,481	3,751	6,084	6,340	8,196	7,687 ^f	
Oklahoma	420 ^c	395 ^h	302 ^h	190 ^h	319 ^h	336 ^h	362 ^h	1,089 ^h	521 ⁱ	526 ^j
South Carolina ^j		1,439	2,435	2,648	2,572	2,692	2,938	3,439	3,303	
Tennessee ^k			84	675	533	742 ^l	718 ^l	692 ^l	801 ^l	
Virginia	660 ^m	1,150 ⁿ	1,572 ⁿ	1,738 ⁿ	1,710 ⁿ	3,335 ⁿ	3,734 ⁿ	4,142 ⁿ	4,430 ⁿ	
Total for Southern States	1,130	5,260	7,999	9,842	9,527	14,978	15,956	18,995	18,242	
Other States										
California ^o									6,500	
Connecticut	3,250 ^p	1,930 ^q	858 ^q	2,159 ^q	2,627 ^q	1,996 ^q	2,587 ^q	2,623 ^q	2,471 ^q	2,964 ^q
Delaware	400 ^r	393 ^r	536 ^r	659 ^r	1,040 ^r	1,404 ^r	1,837 ^r	1,801 ^r	2,336 ^r	
Massachusetts ^s	14,957	13,317	14,782	17,210	16,743	21,825	20,843	23,791	28,195 ^t	
Missouri	200 ^v	2,568 ^v	2,868 ^v	3,345 ^v	3,606 ^v	4,336 ^v	4,030 ^v	3,698 ^v	4,252 ^v	
Montana	560 ^v	113 ^w	154 ^w	238 ^w	215 ^w	289 ^w	281 ^w	249 ^w	441 ^{aa}	
New Hampshire ^{bb}				209	424	453	500	563	680 ^{cc}	
New York	13,680 ^{dd}	62,824 ^{ee}	60,384 ^{ee}	58,771 ^{ee}	71,668 ^{ee}	70,739 ^{ee}	98,864 ^{ee}	115,065 ^{ee}	131,915 ^{ff}	
North Dakota ^{gg}		375	174	379	403	558	614	455	657 ^{hh}	483 ^{hh}
Oregon ⁱⁱ									610	
Washington									Declared unconstitutional	
Wisconsin ^{jj}	6,161	10,394	6,106	9,552	9,186	13,820	18,775	2,761	17,884 ^{kk}	
Total for Other States	39,208	91,714	85,842	92,522	105,912	121,433	148,337	151,006	195,921	
Grand Total	40,338	96,974	93,841	102,364	115,439	136,411	164,293	170,001	214,163	

* Calendar-year statistics are shown where possible; in some cases data are for fiscal years not coterminous with calendar years.

^b Letter from administrative official. Tax on 1929 income returned up to October 7, 1930.

^c Bigham, "State Income Tax Since 1918," *American Economic Review*, June, 1929, p. 231.

^d National Industrial Conference Board, *State Income Taxes*, Vol. I, Table 5. Figure for 1929 estimated.

^e North Carolina, *Report of the Tax Commission*, 1928, p. 573.

^f Letter from administrative official.

^g Bigham, *loc. cit.*

^h Oklahoma, *Biennial Report of State Auditor*, 1928, p. 47.

ⁱ Letter from administrative official.

^j Letter from administrative official. Table Showing Gross Tax Collections by Tax Commission, 1922–1929.

^k National Industrial Conference Board, *op. cit.*, Table 16.

^l Letter from administrative official.

^m Bigham, *loc. cit.*

ⁿ Letter from administrative official.

^o Letter from administrative official. Corporation tax based on calendar year 1928 or fiscal year ending in 1928, in which latter case the tax was prorated. Also includes a portion of the taxes measured by net income received during a fiscal year ending in 1929.

^p Bigham, *loc. cit.*

^q "Comparative Statement of Cash Receipts and Payments," Connecticut, abstract from Treasurer's report—1930.

^r Bigham, *loc. cit.*

^s Bigham, *loc. cit.*

^t Bigham, *loc. cit.*

^u Bigham, *loc. cit.*

^v Bigham, *loc. cit.*

^w Bigham, *loc. cit.*

^x Bigham, *loc. cit.*

^y Bigham, *loc. cit.*

^z Bigham, *loc. cit.*

^{aa} Bigham, *loc. cit.*

^{bb} Bigham, *loc. cit.*

^{cc} Bigham, *loc. cit.*

^{dd} Bigham, *loc. cit.*

^{ee} Bigham, *loc. cit.*

^{ff} Bigham, *loc. cit.*

^{gg} Bigham, *loc. cit.*

^{hh} Bigham, *loc. cit.*

ⁱⁱ Bigham, *loc. cit.*

^{jj} Bigham, *loc. cit.*

^{kk} Bigham, *loc. cit.*

^{ll} Bigham, *loc. cit.*

^{mm} Bigham, *loc. cit.*

ⁿⁿ Bigham, *loc. cit.*

^{oo} Bigham, *loc. cit.*

^{pp} Bigham, *loc. cit.*

^{qq} Bigham, *loc. cit.*

^{rr} Bigham, *loc. cit.*

^{ss} Bigham, *loc. cit.*

^{tt} Bigham, *loc. cit.*

* *Report of Delaware State Tax Commission, 1929, Schedule C and p. 8.*

¹ Massachusetts, *Annual Report of Commissioner of Corporations and Taxation, 1928, p. 42.*

² *Ibid.*, 1929, p. 22.

³ Bigham, *loc. cit.*

⁴ National Industrial Conference Board, *op. cit.*, Table 10.

⁵ Letter from administrative official.

⁶ Bigham, *loc. cit.*

⁷ National Industrial Conference Board, *op. cit.*, Table 9.

⁸ Letter from administrative official. Figure shown is for fiscal year ending June 30, 1930.

⁹ New Hampshire, *Report of State Tax Commission, 1928, p. 16.* Data for part of year 1924.

¹⁰ Letter from administrative official.

¹¹ Bigham, *loc. cit.*

¹² New York, *Annual Report of State Tax Commission, 1928, pp. 84–85.*

¹³ Letter from administrative official.

¹⁴ North Dakota, *Ninth Biennial Report of the Tax Commissioner, 1927–1928, Table 6.*

¹⁵ Letter from administrative official.

¹⁶ Letter from administrative official. Figure is tax on 1929 income collected during 1930. Almost complete for year 1930.

¹⁷ Wisconsin, "The Taxes of the State and Its Political Subdivisions," p. 21, 1901–1928.

¹⁸ *Ibid.*, 1929. Bulletin No. 34.

the tax changes; but, when so many related changes so clearly accompany another tendency, one begins to suspect a relationship. Moreover, it has long been evident to students of taxation that industrial invasion of a rural economy hastens the decadence of the general property tax. Therefore, it may be tentatively concluded that the recent industrial changes in Southern

states have occasioned at least a part of the developments in taxation which have occurred at the same time.

If the induction is justified, it becomes important to evaluate the fiscal evolution in relation to general economic changes currently occurring. In the first place, these several developments in taxation may be viewed as attempts to avoid the breakdown of the

general property tax which was heretofore the primary dependence for state and local revenue. As the states of the Northeast became industrialized, they had grave difficulties with the property tax; and most of the important manufacturing states have in large part substituted other revenue sources. The states of the Middle West have become partially industrialized in the past quarter or half century, but parts have remained agricultural. Several of them have made little progress toward substitution of other taxes, but these have now reached the place where the property tax as an almost exclusive source of state and local revenue is becoming impossible.⁹

While property tax rates in the South have very rarely reached the average levels attained in some of the Middle Western and Atlantic seaboard states, the problem has become acute in a great many instances.¹⁰ It would appear, however, that if the trends outlined above are continued, the states below the Mason-Dixon line may be enabled to skip the stage which, for lack of a better expression, may be designated "the era of the complete collapse of the general property tax." So far as the legislation already discussed seeks to eliminate too large dependence on property taxation, it is of course to be commended.¹¹

⁹ See especially Simpson, H. D., *The Tax Situation in Illinois*, as compared with Lefler, G. L., *Wisconsin Industry and the Wisconsin Tax System*.

¹⁰ It is to be expected that it will become serious at lower rates, because of the lower average incomes received by the people of the Southern states. See Leven, M., *Income in the Various States*.

¹¹ The earlier classification movement in several states was effective in reducing some of the inequalities in the general property tax, but it did not have the effect of raising considerable additional revenue. See Leland, S. E., *Taxation of Intangibles in Kentucky*, p. 44; Leland, "An Appraisal of the Results Secured by the Application

TAXATION TENDENCIES EVALUATED

From no sound, long-run point of view, in the opinion of most economists, can tax exemption as a means of securing the location of manufacturing plants in a given state be defended. Such a policy, aside from subsidizing one competitor at the expense of another, is probably not a very successful means of securing its objective.¹²

The tendency toward the taxation of "luxuries" is not in itself unwholesome. Nor is it, as such, particularly commendable. As a matter of fact, such taxation appears to have been introduced largely to relieve the general property tax burden,¹³ and certainly should be appraised in relation to other taxes levied and to the general economic situation. Beyond question, most of these excises are regressive in their incidence; that is they bear comparatively more heavily on the low income than on higher income receivers. Of course, this is not an insurmountable objection; but if such taxes are to be imposed, they should be levied in conjunction with other taxes distinctly progressive in the fairly low brackets.

It has been shown that the percentage of total income required from the typical American for taxes appears to decrease with increases in the annual income up to several thousand dollars.¹⁴

of the Principle of Classification to Intangible Property," *Proceedings of the Twenty-first National Tax Conference*, p. 317.

¹² Cf. recent study by Metropolitan Life Insurance Company of *Industrial Development in the United States and Canada*; Lefler, *loc. cit.*; and Special Joint Committee on Taxation and Retrenchment (New York), *Tax Exemption in State of New York*, Legislative Document (1927) No. 86.

¹³ Derrick, S. M., "Consumption Excise Taxes as Relief for the Tax Burden on Farm Property," *Proceedings of the Twenty-second National Tax Conference*, p. 263 ff.

¹⁴ Martin, "Discussion of the Income Tax

If that is the case, addition of another regressive element simply makes a bad situation worse if the total tax burden be taken into account, though it may successfully enlarge the base for state taxes *per se*. If, on the other hand, such a measure could be used in conjunction with a steeply graduated personal income tax with very low initial exemptions, it would be unobjectionable, since the progressive character of the income tax would offset the regressiveness of the excise.

As a matter of history, however, when the several states enacted their consumption excises, they did not, except in North Dakota and South Carolina, provide the income tax. Putting the matter another way, states have been prone to consider these excises alternatives rather than adjuncts to the graduated personal income tax.¹⁶

Again, even if the special consumption excises are imposed in such a way as to effect no unfairness in the distribution of the tax burden, great care must be exercised that they be imposed on a small number of carefully selected commodities, at just the right rates. If the number of commodities involved be great, there will be not only an undue interference with business activity, but also unnecessarily high administrative costs. Again, if commodities for which there is elastic demand be selected, the tax will so retard the business as to "kill the goose that lays the golden egg." Finally, if the rate is too low, the revenue will not be great; if too high, the tax will lead consumers to buy from other states and thereby

evade the law. Thus, enterprise within the state will be placed at an undue disadvantage.¹⁶

The more or less general sales taxes as provided in the statutes of Georgia, Mississippi, and West Virginia are objectionable on the ground that they are more regressive than are properly selected excises on particular commodities; that they discriminate against larger businesses by substantial exemptions (\$30,000 in Georgia) for small enterprises; that the degree to which various types of businesses can shift the taxes varies widely, thus imposing a substantial burden on some kinds and none on others; and that the tax is hard to enforce with any approximation of thoroughness. In addition, the Virginia and Kentucky merchants' taxes are discriminatory, the former imposing heavier rates on the smaller and the latter on the larger merchants.¹⁷ The only merit of the general sales tax is its revenue-producing capacity; it is otherwise unfortunate for the economical and just functioning of the fiscal system, as well as unduly disturbing to the economic organization of the state.

The unusually high gasoline and registration taxes imposed in the South are explained almost wholly by the retardation in the road-building programs. The percentage of highway

Bill before the House Committee on Revenue and Taxation, Kentucky General Assembly, March 3, 1930," University of Kentucky. Cf. Schultz, W. J., "Who Ultimately Pays the Taxes?" p. 15.

¹⁶ Arkansas and Georgia have later imposed personal income taxes, but they do not have, particularly in Georgia, the steep graduation and the low initial exemptions.

¹⁶ It is rumored that the recent raise in the Tennessee tobacco tax rate has had the result of reducing materially the amount of product sold by dealers in the state. For more elaborate studies of this subject, see Miller, E. T., "State Excise Taxes," *Proceedings of the Nineteenth National Tax Conference*, pp. 224 ff.; Martin and Sullivan, "Proposed Consumption Taxes," University of Kentucky; Derrick, *loc. cit.*; Jensen, J. P., "General versus Selective Sales Taxes," *Proceedings of the Twenty-second National Tax Conference*, pp. 403 ff.

¹⁷ In Georgia it is provided that the tax after the current year shall be a gross or net tax on each corporation, whichever is higher. This may be defensible.

expenditures derived from taxation of motor-vehicle owners by these methods is not materially above the proportion secured thus in the remainder of the United States. Consequently, it would appear that present rates can be easily defended. It should be observed, too, that some additional revenue may be raised through the registration license by providing adequate progression on the basis of gross weight and tire equipment to secure fairness in the distribution of the motor tax burden among the various users of motor vehicles.¹⁸

Business and individual income taxation offers the most important alternative to property and other general taxes. It is commendable from the point of view of being readily coordinated with the tax systems of these several states; of having little or no adverse effect on the general economic life of the community; of having certainty of incidence; of taxing more especially those who pay no property tax; of offering an elastic element in the tax system; and of being administered without too much expense and difficulty. It cannot be as generously used at the present time as its merits justify, because of the erroneous belief that it interferes with industrial develop-

ment.¹⁹ In any state, however, it will raise substantial revenue more equitably than will the property tax.

TAXATION TRENDS IN THE SOUTH

Let it be said in conclusion that the states of the South have shown tenacious determination, as indicated by the analysis of five taxation tendencies, to escape the complete breakdown of the fiscal systems by too rigid adherence to the general property tax as a primary source of revenue. They have, in order to achieve their purpose of industrializing rapidly and avoiding enslavement to the general property tax, adopted some means of escape which are distinctly unjust; some which, though not in themselves unwise, are poorly coordinated with the tax systems; but others which are wholly commendable. In the first category are found special, usually temporary, tax exemptions to industrial enterprises and general or near-general sales taxes; in the second, some of the special consumption excises; and in the third, the motor vehicle registration, gasoline, and income taxes. Increased use of personal and business income taxes in lieu of at least a part of the general property tax is the most fortunate taxation trend observable in the new industrial situation of the South.

¹⁸ "Some Problems of Motor Vehicle Taxation," *loc. cit.*

¹⁹ Lefler, *op. cit.*

Problems of Taxation in Tennessee

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RECENT financial history in Tennessee has been characterized by rapidly rising expenditures, a sharp increase in indebtedness, and a feverish search for revenues. In the field of taxation the chief features have been, first, vigorous opposition to the property tax on the part of certain leaders, resulting in legislation providing for its repeal after 1931; and second, successive diversification of the tax system by the adoption of sales taxes on tobacco and gasoline, a net income tax on corporations, and a tax on the income from certain stocks and bonds. Financial adjustments necessitated by the transition from a predominantly agricultural to a semi-industrial state have been complicated by a Constitution adopted sixty years ago.

From the Civil War almost to the present time, per capita expenditures of Tennessee have been much below the average for the country as a whole. During the war the state served both as a battleground and as a main highway for competing armies. At the close of the war, agriculture, transportation, and industry, as well as state finances, were almost completely demoralized, thus creating the proper setting for a period of protracted economy. Extension of State aid to banks, railroads, and other forms of internal improvements had brought disastrous results, and when the reaction set in, the scope of State activities was rigidly limited. Jealous defense of local "rights" and an almost universal opposition to free public schools, for years kept State support of education at a minimum.

Division of either political or eco-

nomic history into arbitrary periods often leads to false emphasis. In spite of this danger, it is possible to recognize three main stages in the development of State expenditures of Tennessee. The first, which is rather clear-cut, covers the period 1865 to 1904 and may be designated the "debt" period, during which interest payments outstripped all other expenditures. The second, less definitely marked, extends from 1904 to 1921 and is characterized by increasing expenditures for schools. During the early part of the period, pension payments to Confederate soldiers and expenditures for hospitals and maintenance of convicts fell but little below the cost of schools; but by 1910 or 1912, expenditures for schools amounted to more than 25 per cent of total disbursements and exceeded the next largest expenditure—pensions—by 50 per cent. The third period, from 1921 to the present, is overwhelmingly dominated by highways, 54.25 per cent of total expenditures during the six years 1924–1929 going for highways and highway bridges.

THE "DEBT" PERIOD

For almost twenty years following the close of the Civil War, the finances and the politics of Tennessee were in constant turmoil because of a large state debt, representing for the most part extensions of aid to railroads and other forms of internal improvements. Questions were raised regarding both the legality of the war-time government and the conditions under which the debt had been incurred. Finally in 1883, after some half dozen pro-

posals had failed, an agreement providing for a reduction of almost fifty per cent was reached and "settlement bonds" were issued to take up the old obligations. Compared with the customary state indebtedness of the present day, the amount seems trivial;¹ but with industry and trade so demoralized, the burden seemed overwhelming.

For at least two decades, attempts to expand State activities were feeble. Measured by present standards, total expenditures also seem trivial, amounting to only \$3,291,301 for the biennium 1884-1886, and to \$3,774,515 ten years later.² Until around 1900, payments of interest constituted from 25 per cent to 30 per cent of total disbursements, followed by criminal prosecution taking from 8 per cent to 12 per cent, hospitals 8 per cent to 10 per cent, public schools 6 per cent to 8 per cent, and schools for the deaf, dumb, and blind 5 per cent to 6 per cent.

THE "SCHOOL" PERIOD

Gradual increases in wealth and income were finally reflected in increased expenditures. Aside from payments into the sinking fund, the items showing the greatest increase from 1900 to 1909 were maintenance of convicts, public schools, and Confederate pensions. The greatest interest, however, centered around education, and the entire period from about 1900 to the present has been marked by attempts to expand school revenues. The result is shown in appropriations for public schools, which increased from \$1,550,145 for the biennium 1911-1912 to \$7,949,749 in 1927-1928.³

¹ Before refunding in 1883, the total debt amounted to \$28,786,000. This was reduced to less than \$16,000,000 by refunding.

² *Biennial Reports of the Comptroller of the Treasury*, 1886 and 1896.

³ *Biennial Reports of the Comptroller of the Treasury*. These figures do not include ap-

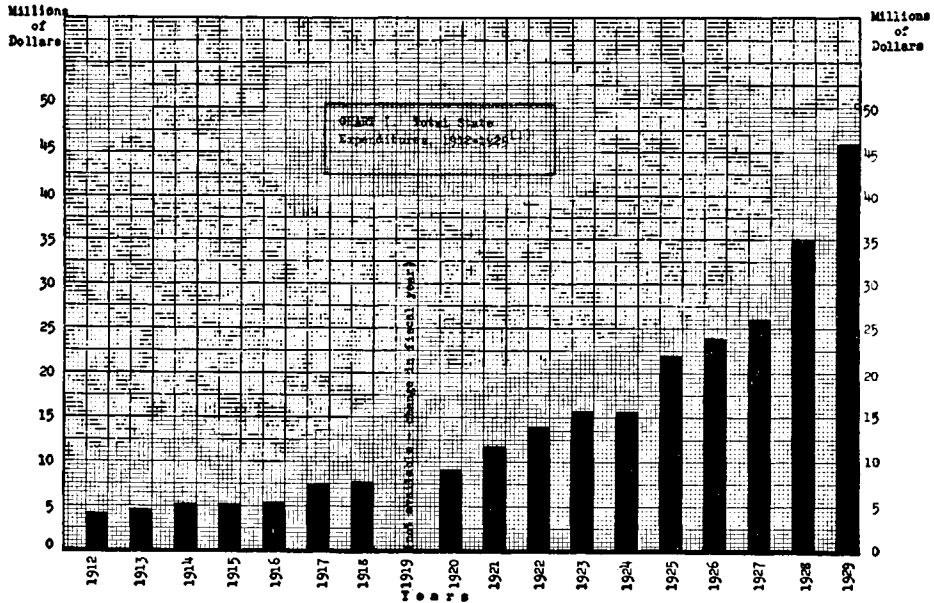
Although East Tennessee University at Knoxville was designated as the State University as early as 1879, the State provided no regular financial support until 1909, when the University was granted a certain percentage from the general education fund. Even then the amount was rather nominal, seldom rising as high as \$100,000 per year, and not until 1917 was adequate support provided by the levy of a special one-half mill tax on property.

Higher education was extended in another direction in 1909 by the creation of four State normal schools, funds for original construction being furnished by local governments but costs of maintenance and operation by the State. Combination of expenditures for normal schools, public schools, and the State University shows that from twenty-five to thirty per cent of total State disbursements was expended for education during the latter part of the "school" period.

THE "HIGHWAY" PERIOD

Expenditures for schools have continued to increase since 1921, but they have been dwarfed by mounting costs of highways. State expenditures for highways began in 1917, but were held within narrow limits for some years by a lack of revenues. Aside from Federal aid, the chief sources from 1917 to 1923 were a special property tax and motor-vehicle fees, which together yielded about \$11,000,000 during this period. Greater elasticity of revenues was provided in 1923, when the property tax was replaced by a gasoline tax, which, by subsequent increases in rates, now yields more than \$10,000,000 annually.

For several years there was vocal adherence to a "pay-as-you-go" policy, appropriations for the State University or the five teachers' colleges.



(1) Data from *Biennial Reports of the Comptroller of the Treasury*, 1912 to 1923; thereafter from *Condensed Financial Statements* issued by Department of Finance and Taxation.

but this was broken down rather early by the practice of allowing or requiring counties to contribute to the cost of roads built within their borders. Most of these funds were raised by bond issues, and as the burden increased, the counties clamored for relief. Remedial legislation was enacted in 1927, under which the State, since January 1, 1929, has set aside one cent of the gasoline tax to pay the interest and principal of \$30,000,000 county highway bonds.

Another breakdown of the "pay-as-you-go" policy occurred in 1925, when the practice of issuing short-term notes was inaugurated. These were made payable from current revenues of the Highway Department—that is, from the gasoline tax and motor-vehicle fees, and maturity was limited to five years; hence, they were referred to not as a debt but as a device for "supplementing" or rather "anticipating" tax receipts. Succeeding legislatures continued the practice, and on June 30,

1930, outstanding notes totaled \$47,200,000. Specific provision for retirement was made in 1929 by setting aside one cent of the gasoline tax after January 1, 1931, and another one cent beginning January 1, 1935.

Pressure to complete the primary system as rapidly as possible had led to the creation of a special debt for highway bridges. The issuance of bridge bonds, to be repaid by tolls, was begun in 1927, and further increases in 1929 brought the total amount outstanding on June 30, 1930 to \$13,850,000.

Thus we see that highway revenues have been increased by four different methods since 1922: the adoption of a gasoline tax which now stands at five cents per gallon; semicompulsory contributions from counties, resulting in the assumption of \$30,000,000 county highway bonds by the State; the issuance of short-term notes to the amount of \$47,200,000; and bridge bonds totaling \$13,850,000. As a result, the increase in highway expenditures has

been phenomenal, said expenditures rising from \$4,664,000 in 1922 to \$28,-985,000 in 1929, and accounting for 54.25 per cent of total expenditures during the six years ending June 30, 1929.

This hasty review of expenditures may be concluded by noting the relative importance of the various activities as shown in Table I, and the trend of total expenditures as shown in Chart I. In 1912, total disbursements amounted to \$4,128,000. By 1920 they had increased to \$9,216,000, and by 1929 to \$45,925,000. From 1922 to 1929, total expenditures increased 329 per cent; but when costs of roads and schools are eliminated, the increase is only 64 per cent.

THE REVENUE PROBLEM

The problem of securing increased revenues has been complicated by Constitutional restrictions. The Constitution now in force was adopted in 1870, and in it are reflected the feelings

and the prejudices of the Reconstruction era. The chief provisions relating to taxation are as follows:

(1) All property, real, personal, and mixed shall be taxed, but—

(2) The legislature *may* exempt property held and used for government purposes, or for purely religious, charitable, scientific, library, or educational purposes.

(3) It *shall* exempt one thousand dollars' worth of personal property in the hands of each taxpayer.

(4) It *shall* exempt the direct produce of the soil in the hands of the producer and his immediate vendee.

(5) All property shall be taxed according to value, so that taxes shall be equal and uniform throughout the state.

(6) No one species of property from which a tax may be collected shall be taxed more highly than other species of property of the same value.

(7) The legislature shall have power to tax merchants, peddlers, or privi-

TABLE I—STATE DISBURSEMENTS, FISCAL YEAR ENDING JUNE 30, 1929⁴

Per Cent Distribution		Amount
.75	Agriculture.....	\$346,134.07
15.96	Education, including U. T.....	7,330,591.27
1.07	Public Health.....	491,471.87
55.70	Highways.....	25,580,315.47
7.41	Highway Bridges.....	3,404,300.00
1.46	Interest County Highway Bonds.....	670,762.16
6.82	Penal and Charitable Institutions.....	3,132,014.26
1.82	Judiciary.....	833,930.34
1.91	State Debt and Interest.....	876,521.25
.93	Sinking Fund Bonds and Interest.....	427,848.32
1.70	Confederate Pensions.....	779,250.38
.53	Legislative Expense.....	243,809.30
1.37	Lands Smoky Mt. Park and Reelfoot.....	630,629.00
1.96	Administrative.....	895,349.38
.61	Sundry Accounts (State Aid, etc.).....	282,052.31
100.00	Total Actual Expenditures.....	\$45,924,979.38
	Plus vouchers issued for renewal of notes (Not an expenditure).....	3,500,000.00
	Total Disbursements.....	\$49,424,979.38

⁴ From *Condensed Financial Statement 1929*, Department of Finance and Taxation.

leges in such manner as they may from time to time direct.

In accordance with these provisions, the State, until very recently, has leaned heavily upon the general property tax, supplemented by numerous minor occupation or license taxes,

of coal and gasoline.⁵ The relative importance of the various sources is shown for representative years in Table II.

DIFFICULTIES OF THE PROPERTY TAX

In using the property tax, Tennessee has encountered the usual difficulties—

TABLE II—STATE RECEIPTS FROM ALL SOURCES⁶
Biennial Periods 1900-1902 and 1910-1912

Source	1900-1902		1910-1912	
	Amount	Per Cent of Total	Amount	Per Cent of Total
A. Property taxes:				
General property.....	\$2,314,659		\$3,385,388	
Merchants.....	154,464		201,808	
Public utilities.....	398,512		698,844	
Total property.....	\$2,867,635	54.1	\$4,286,040	49.1
B. Privilege taxes:				
Miscellaneous businesses.....	764,478		1,413,994	
Public utilities.....	47,491		23,500	
Special businesses.....	17,259		16,178	
Total privilege.....	\$829,228	15.7	\$1,453,672	16.6
C. Insurance companies and agents.....	339,449	6.4	669,403	7.7
D. Inheritance taxes.....	71,378	1.4	299,488	3.4
E. Fees:				
Charters.....	66,523		148,095	
Filing corporation reports.....			146,087	
Coal oil inspection.....	74,210		118,564	
All others.....	18,886		71,977	
Total fees.....	\$159,619	3.0	\$484,723	5.5
F. Charitable and penal institutions:				
Maintenance of convicts.....	922,665		1,041,361	
All other.....			224,226	
Total institutions.....	\$922,665	17.4	\$1,265,587	14.5
G. All other sources.....	106,057	2.0	276,155	3.2
Grand total.....	\$5,296,031	100.0	\$8,735,068	100.0

commonly referred to as privilege taxes. The chief non-tax revenues have been derived from maintenance of convicts which first became important about 1896-1900; from receipts from charitable institutions, mainly hospitals; and from fees for inspection

the almost complete failure to reach personal property—especially intangi-

⁵ Although classified as "fees," these inspections in 1930 yielded revenues of almost \$1,000,000 in excess of the cost of collection.

⁶ Classified by the writer on the basis of data given in *Biennial Report of the Comptroller of the Treasury*, 1918-1920, pp. 246-249.

bles—competitive undervaluation between counties, deliberate or accidental discrimination, and the failure of equalization machinery to “equalize.” These defects were readily overlooked so long as State needs were small, but as rates were increased they were forced sharply into the foreground, and in 1919 a complete reassessment was undertaken. Assessed valuations were thus increased by more than \$1,200,000,000, tax rates were cut in half, and many inequalities in assessment were wiped out. But attempts to finance enlarged programs for schools and

second administration, property taxes were cut to twenty-five cents, and a ten per cent sales tax was imposed on tobacco with the proceeds earmarked for schools. All the new levies are considered to be taxes on “privileges” and thus justified under the Constitutional clause referred to above.

What may prove to have been the final fight against the property tax was waged in 1929 under Governor Henry H. Horton, who advocated its elimination as a source of State revenue and the adoption of a general sales tax or

TABLE III—MAIN TAX SOURCES, 1929 AND 1930

Source	1929	1930
Gasoline tax.....	\$6,342,809	\$10,165,723
Motor vehicles.....	4,288,420*	4,811,982
Property tax.....	3,352,628	3,327,391
Tobacco tax.....	1,305,147	1,971,841
Insurance companies and agents.....	1,547,108	1,603,364
Privilege taxes†.....	1,187,694	1,197,294
Coal oil and inspection fees.....	934,622	1,027,744
Corporate excise.....	670,413	932,318
Income tax on stocks and bonds.....	.....	571,962
Inheritance tax.....	513,732	326,790‡

* Figures are for calendar year.

† Covers only collections through county court clerks, which, however, include by far the greater part of privilege taxes.

‡ Decrease in 1930 due in part to change from monthly to quarterly system of collections.

roads threw greater and greater burdens on property, total levies for State purposes rising from \$3,633,000 in 1918 to \$6,231,000 in 1922.⁷

At this juncture, the movement to broaden the tax system bore fruit under the able leadership of Governor Austin Peay. At the beginning of his first term, in 1923, property rates were cut from thirty-six cents to thirty cents, and two new taxes imposed—a gasoline tax of two cents for highway purposes, and an excise tax of three per cent on the net income of corporations. In his

turnover tax in its stead. The legislature in regular session refused to approve either proposal, but on being called in special session in December, 1929, voted to repeal the property tax to take effect January 1, 1931.

Thus, the chief developments since 1922 have been the relief of property and greater diversification of the tax system. As previously indicated, during the biennium 1900–1902, 54 per cent of all State receipts exclusive of borrowing were derived from taxes on property. By 1910–1912 the proportion had fallen to 49 per cent; by 1922,

⁷ *First Biennial Report of the Tax Commissioner*, pp. 312–313.

to 40 per cent; and by 1928, to 15 per cent. The extent of diversification may be noted by comparing Tables II and III, the latter showing the amounts collected from the most important tax sources in 1929 and 1930. Of the ten sources listed in Table III, four were not utilized prior to 1923, and these four in 1930 yielded approximately fifty per cent of the total tax revenue of the State.

CRITIQUE OF THE TAX SYSTEM

The chief advantages and disadvantages of the present tax system may be noted briefly as follows:

(1) Because of the legislation enacted since 1922, the system is now fairly well diversified. With taxes on corporate income, tobacco, gasoline, inheritances, gross premiums of insurance companies, income from stocks and bonds, and so forth, the State is assured of a fairly stable revenue, and the greater part of the population is reached in some way.

(2) There is a greater reliance upon "ability to pay," since the enactment of the corporate excise in 1923 and income tax on stocks and bonds in 1929; but there is still no element of progression except in the inheritance tax. Corporate income is taxed at a flat rate—three per cent—and properly so; the tax on stocks and bonds is also a flat rate—five per cent—which is probably justified in the absence of a general personal income tax, and in view of the fact that it was intended as a substitute for a property tax on such investments. On the other hand, the tobacco tax, which is referred to as a "voluntary" luxury tax, is distinctly regressive; for the rates on cigars and manufactured tobacco are ten per cent, on cigarettes whose intended sales price is more than one cent per cigarette, twenty per cent, and on all other cigarettes, one fifth of one cent

each. This results in an ad valorem rate of twenty-five to thirty per cent on the cheaper grades.

(3) There can be no question that automobile owners are bearing their proportionate share of the burden. Taxes on gasoline and motor vehicles together accounted for more than fifty per cent of total State tax receipts in 1929 and 1930, and this does not tell the whole story, since the major part of bridge tolls and inspection fees on coal oil and gasoline is finally paid by automobile owners. The gasoline tax now stands at five cents per gallon, which, at present prices, amounts to an ad valorem tax of from twenty to twenty-five per cent.

(4) It is entirely possible that rates on tobacco have been pushed beyond the point of maximum yield. No one knows, of course, the extent to which "bootlegging" and evasion have been stimulated, but it is well known that "out-of-the-state" concerns advertise interstate shipments direct to the consumer. Such sales, of course, cannot be taxed.

(5) Corporations are taxed on both income and property, while other forms of business organization are taxed only on property, thus creating a certain amount of discrimination.

(6) The yield of the inheritance tax has been low as compared with that of other states, which is probably accounted for by the weakness of local administration. Centralized administration was provided in December, 1929, but the results cannot yet be determined.

(7) The chief defect of the system as a whole is the scarcity of funds for general State activities. The tobacco tax is earmarked for schools, but provides only a fraction of the amount required, while the gasoline and motor-vehicle tax are devoted to highway purposes. Thus, only about forty per

cent of total tax revenues in 1930 is available for general purposes.

FUTURE PROBLEMS

The legislature in 1929 displayed considerable enthusiasm in making appropriations, but was reluctant to increase taxes. Adjournment was followed by rumors of a threatened deficit, which in turn were followed by the summons for a special session. The chief results of the special session were slight increases in the tobacco tax, transfer of the inheritance tax from county to State officials, repeal of the property tax to take effect January 1, 1931, and authorization of \$5,000,000 emergency notes.⁸

The success of these emergency measures is not yet known. It is obvious, however, that the immediate problems to be faced by the legislature in January, 1931, are to provide for retirement of the emergency indebtedness carried over from the present biennium, which may run from \$2,500,000 to \$5,000,000, and second, to find some new source of revenue to replace approximately \$3,500,000 lost by the repeal of the property tax.

Opportunities for meeting these problems seem rather limited. The most productive fields for special sales taxes are already covered by the gasoline and tobacco taxes. Amusements, soft drinks, and cosmetics must be admitted as possibilities, but if the small yields from special taxes on malt

and carbonic acid gas can be taken as a guide, not much help can be expected from these sources. Severance taxes hold little promise, for the value of mineral production seldom exceeds \$40,000,000 per year. Gross receipts taxes on public utilities appear more promising, but the main choice seems to lie between a general sales tax and a personal income tax.

Public opinion as to the relative merits of the income and the sales tax is difficult to gauge in the absence of organized support of either. Opposition to the latter in 1929 was both vigorous and vocal, but a similar storm might have been provoked by the proposal of an income tax. The chief obstacle to an income tax seems to be a doubt regarding its constitutionality.

Taking a long-run view, the major problem is that of providing adequate funds for general or social activities of government. The highway program, which has accounted for the great bulge in expenditures, is well on the way to completion. To carry out the program, a debt of approximately \$91,000,000 has been created; but unless this is increased, present highway revenues appear adequate to maintain the system and retire the debt within a period of fifteen to twenty years. Important strides have been made in the development of schools, health, and conservation, but an immense job remains to be done; and the danger, if there is one, is that the less spectacular but nevertheless vital activities may be neglected.

⁸ At the time of writing, only half of the authorized amount has been issued.

The Changing Political Philosophy of the South

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THE agrarian-mindedness of the South has been seriously shaken by the recent spread of industrialization, and verity may not abide with Holland Thompson's comment that this section "has not yet developed an industrial philosophy."¹ Ever since the Civil War the captain of industry or finance has been gradually supplanting the country gentleman as the idealistic pattern for the aspiring youth of the South, while the changes since the World War have strengthened the attitude that industry is something to be entered and that agriculture is something from which to escape. There are southern college professors in the realm of the social sciences who are amplifying the earlier gospel of *De Bow's Review*, of New Orleans, that industrialization is not only good for the South but is also the salvation of southern agriculture itself.

This shifting of agriculture in the scheme of importance to a status secondary to industry is accompanied by a factory-hunting policy that does not disprove a *New York World* opinion that the "sudden growth of textile factories in the South has had too much influence on a number of state legislatures."² This quoted statement might be modernized by adding power utilities to textile factories, and newspapers to legislatures. The charge of discouragement of industry or of scaring away investments is becoming a point on which Southern political leaders have to be careful.

¹ *The New South*, p. 116, New Haven, 1921.

² Villard, O. G., in the *Nation*, June 25, 1930, quoting the *World*, August 25, 1924.

CHANGE IN TARIFF ATTITUDE

The South's traditional tariff attitude, as a point of solidarity, is threatened. Al Smith had no trouble in the South in 1928 because of his wide departure from "tariff for revenue only." As Professor Jacob Viner has observed, "the growing industrialization of the Southeast has brought with it the tariff attitudes of the older industrialized areas." As he further adds, in spite of the general disadvantages of the protective system to the South, "the gains come in concentrated parcels to well-organized groups."³

In addition to the trading of tariff votes by Louisiana and Florida for protection for sugar and citrous fruits, the South is offering original tariff support through the rise of the cottonseed oil and peanut industries, with a petroleum association in Texas also joining a voice to the chorus. The influence of Carolina manufacturing interests was reflected in the making of the last tariff bill, and an Alabama Ku Klux Klan senator gave an occasional vote in accord with the wishes of multimillionaire industrialists of his own state. The *Baltimore Manufacturers Record* is emphasizing its half-century support of tariff protection for the South, and a casual editorial word for protection, more or less qualified, is to be found at times in the press of Dallas or Birmingham. But the South is far from "sold" on the tariff, at least in commercial centers in depression days. The *Atlanta Constitution* was not alone in denounc-

³ *Century*, winter number, 1930, p. 53.

ing the Hawley-Smoot bill and assuming "that the profiteering industrialists have controlled Congress."⁴

Southern philosophical respect for States' rights has been weakening under the pressure of economic need and the influence of Federal aid. A southern governor was quoted a few years ago as saying that he was brought up on the doctrine of States' rights, but has learned that the cotton boll weevil did not recognize state boundaries. It is a case of condition modifying theory. The seeking of Federal aid for southern highways, flood control, barge service, or cotton marketing, is only one aspect of the southern policy of looking northward for public and private funds for economic, scientific, and cultural development.

To this policy, implying in many ways a limiting of State powers, the articulate South has become more and more reconciled since the days following the Civil War. A certain prophetic significance is thus attached to an unsigned article in *De Bow's Review*, May, 1868, which strongly indicted the ante-bellum statesmanship of its section for overworking the Constitutional arguments of States' rights and hindering the coming of capital, industry, and transportation facilities to the South. The suggested change in attitude and policy has in a large degree taken place.

A case might be made for the thesis that southern championship of national prohibition was in part a middle class achievement in scrapping States' rights under the spur of economic efficiency and over the opposition of the once powerful gentlemen of the old school. The old doctrine of particularism, in the South as in the North, is kept alive chiefly as a defense mechanism by scattered social and economic groups.

⁴ Editorial, June 8, 1930.

REPUBLICANISM GAINING IN THE SOUTH

The spread of industrialism and its accompanying financial integration in the South is also correlative with a declining interest in political Bryanism. Populistic doctrines have found less permanency in the South than in portions of the West, for though still largely agrarian, the twentieth-century South is not radical, but reflective of an increasing kinship with eastern economic orthodoxy. La Follette polled only about two per cent of his popular vote in 1924, for President, in the eleven ex-Confederate states, or a smaller total in these states than he received in New Jersey and a much smaller vote than that cast for Coolidge in Texas or Tennessee or North Carolina.

It is the conservative rather than the "progressive" wing of the Republican Party that is spreading in the South, the increase applying to votes as well as to party faith. Will Rogers, in one of his humorous homilies last June, found a point in noting the extensive census gains of southern industrial centers, with the comment that "the Yankees are swarming into the South like locusts" and that "the rascals bring their Republican politics with 'em." In many manufacturing districts of the South it was becoming rather respectable to be a Republican before 1928, and Hoover's southern vote was caused partly by an interlocking of industrialism and Republicanism in the newer regions, where important interests sought insurance against upsetting the applecart of prosperity.

That factor must be recognized with all due respect or allowance for the noneconomic aspects of the religious and prohibition issues. By no other token can it be adequately explained why the new South regions, with extensive population gains and

industrial progress, turned to Hoover, while the comparatively static old South sections supported Smith. Hoover captured the fast growing districts of Houston, Dallas, Birmingham, Atlanta, Richmond, and Chattanooga, while Smith carried the old and comparatively slow centers of San Antonio, Galveston, New Orleans, Mobile, Montgomery, Savannah, and Charleston, with the growing old river town of Memphis.

Politics may be a bag of traditions in the older portions of the South, but it is being penetrated by an industrial economy in the newer sections, with a geographic cleavage manifest within and across state lines. The transition might be interpreted as a change from one conservative outlook to another.

The southern industrial element, dynamic and articulate, is registering an influence toward change in the meaning and the spirit of government as against the rather political and theoretical conceptions of the country lawyer. This tendency is illustrated by the fact that some of the most successful and constructive southern governors in the century came to office from a business or industrial background and without formal legal training. Examples are: Byrd of Virginia, Parker of Louisiana, and Comer and Kilby of Alabama—men of action rather than of exposition.

Under such influences, business methods in government tend to get the right of way over the ideas of checks and balances, and governmental functions tend to expand in response to social or business needs, with a centralized limitation on county autonomy and elected county officials. In fact, economic pressure is lending weight in different parts of the South to a rather continuous discussion of reform and even of consolidation of units in the realm of county government, which is

an important item in this section. Government tends to become an agent of industrial prosperity, with urban elements modifying the agrarian content of politics. Even professional politicians, attaining power to exploit government, do so in the name of "progress."

INDUSTRY AFFECTS POLITICAL PHILOSOPHY

The business class political philosophy of the new South is broad enough to include programs of highway improvement, educational expansion, and health regulation. But it does not embrace any comprehensive challenge to laissez faire ideas in the sphere of relationship between capital and labor, and the section is lagging in social support of such matters as effective child labor regulation and compensation legislation. The Civil War destroyed the southern landed aristocracy that might have injected a touch of benevolence into the public attitude toward industrial labor as did the British landed nobility in the nineteenth century.

And, on the other hand, the South has a shortage of philosophical radicals as well as of political and intellectual liberals, aside from a few carpetbag reformers and native hangers-on. When a university professor, not a chamber of commerce secretary, wrote a recent book, *The Advancing South*, he had to use loose labels, scout widely in time, space, and occupations, and then use a few hidebound conservatives to round out his "advancing" team.

Industrial labor has not yet found a niche in southern political philosophy, and the individualistic spirit is strong in a realm of threatening social problems. As Victor Clark observes, cotton mills have done "more to revolutionize the social standards and perhaps

the real political creed of the South than any other single branch of industry,"⁵ but Gastonia seems to show that the industrial South has yet to pass from the labor views of Hayes or Cleveland to those of Roosevelt.

The shift toward social control in this sphere is rendered the more difficult by the frontier or agrarian environment from which the textile labor supply is largely drawn. As to Negro labor, it is still rather effectively subject to the laissez faire system which it entered upon passing from slavery, with the white voters and employers of the uplands lacking somewhat the sympathy of the former masters of the low country. The courting of industrialism may prove as detrimental to the freedom of thought in an important social realm as was the defense of slavery in former days, with a smokestack aristocracy becoming as sensitive at vulnerable points as was the former landed aristocracy.

The American transfer of emphasis from political life to economic life has been true in the South since the Civil War and more particularly since the World War. This shift has occurred in spite of the background of political-mindedness in Dixie, and it has been due to the southern economic revolution with its arresting attention, to the decline of southern political power in the Nation, and to the modification of spirit and attitudes by the transfer of social dominance from the old plantation regions to the industrial regions of shorter traditions, of less cultural history.

Hence, politics itself often becomes a business—a business of gain, even graft—instead of just the means for control of public policy on the part of a social group. Cases in point can be

found in the political exploitation of highway funds in Southern states, which has led to southern praise of Federal control as a means of escape. In statesmanship and political thought, the present South is relatively inferior to the old South as compared with trends in other sections, and there is something in James Southall Wilson's surmise of a rotation of crops in the region from statesmen to literati.⁶

Furthermore, a disproportionate number of the old South offspring hold high and low positions as officers in the United States Army. If the amateur spirit of the South has not been killed by industrialism, it has nevertheless been largely driven out of politics; and Bobby Jones declines to be a candidate for Congress in a center where politicians were recently commuting between the city hall and the chain gang.

It is not widely erroneous to venture the generalization that the two outstanding and circumscribed poles in southern political ideas and practice were, in a certain popular sense, strikingly typified by the Texas Democratic run-off primary for the gubernatorial nomination in 1930, in which the voters had to choose between Sterling and Ferguson, between a big business man and a big spoilsman (and wife), between business politics and spoils politics, perhaps between honesty and dishonesty in government, but with no chance to support a broad social program. Similar parallels can be found in other states, for the new South is yet to have a Governor Wilson, a Governor Pinchot, or a Governor Roosevelt, either Theodore or Franklin.

ACADEMIC RESEARCH IN THE SOUTH

The southern scene, under the influence of industrial change, offers

⁵ *History of Manufactures in the United States, 1860-1914*, p. 187, Washington, D. C., 1928.

⁶ *Virginia Quarterly Review*, pp. 553-560, October, 1929.

opportunities for explorations on the part of political and social scientists, opportunities that are not entirely neglected. North Carolina is becoming the Wisconsin of the South, with a state university that is sponsoring investigations, and publications which turn the light on industrial and political conditions in the Carolinas and the South, with the subjects of study including living standards in mill villages and the general level of wages and incomes.

Other commonwealths and universities, including Virginia, are following suit, though the University of Alabama is not alone in stressing a commerce school to the comparative neglect of disinterested social studies, and one might wish that southern independent endowed institutions were more alive to scientific observation of the social conditions and developments of the region. It is hardly too much to say that Vanderbilt University has lost much of its status of academic leadership in a large part of the South through the neglect of aggressive pioneering in the social sciences.

Among the serious journals in the South dealing in part with political thought must be mentioned *Social Forces*, the *South Atlantic Quarterly*, the *Virginia Quarterly Review*, and the *Southwestern Political and Social Science Quarterly*. These are vehicles of southern and national discussion, with much stimulus from the industrial tide and with a moderately critical frankness that suggests a southern shift from rejection to acceptance of Walter Hines Page's early reform dreams, if only as a sort of academic entering wedge. They collectively constitute something of a substitute, with a difference, for the expositions

of the ante-bellum political patriarchs ranging from Jefferson to Calhoun.

There are a few newspapers that, in a conservative way, reflect a scholarly flair toward governmental issues in a new age; among them, the *Richmond Times-Dispatch*, the *Dallas News*, and the *Chattanooga News*.

CONCLUSION

Individualism is yielding gradually, not rapidly, to social thought in response to the impact of industrialism on the agrarian civilization of the South. The sickness of King Cotton is causing both cotton manufacturers and cotton farmers to wrestle with the problem of economic recovery through organization—a method which has been sadly lacking among both groups.

The realization of the comparative inferiority of wages and incomes in the South is stimulating a drive to expand labor unionism in this section, and candidates for public office in industrial districts are finding it profitable to appeal to labor.

The new social attitude is finding reluctant reception in high places, and, as a scholarly gentleman with an old South heritage once remarked about himself, many a Southerner would personally much prefer the freedom of laissez faire individualism, but is realizing that such a system will no longer work.

The new industrialism of the South is producing a critique of itself, but this critique is partly an attempt to salvage a modicum of the old South ways of life, partly a socio-scientific cry for a new day, and in either case a minority voice in the face of a philosophy of progress that is not distinctly divorced from exploitation.

The South's New Industrialism and the Press

By MARK ETHRIDGE

Managing Editor, *The Macon Telegraph*, Macon, Georgia

SPEAKING in July of 1930 before a civic organization, the president of one of the largest industrial corporations in the South said:

Until recently, there existed here in the South, in our industrial plants, the most wonderful spirit of understanding and sympathy between employers and employees. I do not believe that the condition could have been duplicated anywhere else in the world. Employers and employees were men and women of the same blood, actuated by the same ideals and moved by common impulse. The situation was unique and the economic and social problems incident to the industrial development in a comparatively virgin territory were being quietly, peacefully and successfully worked out.

More recently, forces and influences have been at work on this situation that are new to our thought and experience. There is hardly any need in this presence to be more specific or to take the time to call attention to the unfortunate disturbances that have occurred here in the South, beginning with the Gastonia affair and followed by others, practically all of them ending, as is usually the case, with either bloodshed and death, or at its mildest, in the disruption of happy and peaceful relations existing in the community.

If one is allowed two reservations, one which questions the "common impulse" and one which questions whether the social and economic problems involved in our new industrialism were being "successfully" worked out, then one may credit as truth everything the manufacturer said.

SOUTHERN EDITORS AROUSED

Forces and influences new to the thought of the industrial magnates have come into play in the South since

New England's textile industry began its hegira to the Piedmont escarpment to take advantage of the great reservoir of cheap labor. Among those forces were the newspapers of the South, aroused to the danger of the new industrialism by what happened at Gastonia and Elizabethton. For fifty or sixty years, as long as the mill workers themselves were docile, the newspapers were not particularly exercised over the social implications of industrialism. But what transpired at Gastonia and Elizabethton gave them warning and caused a definite crystallization of the opinions of those southern editors who are accustomed to discuss issues more vital than the price of beans in Abyssinia or the beautification of highways.

While it is still true that the overwhelming majority of southern newspapers, if one includes the weeklies, have indulged in little or no discussion of the social and economic ramifications of industrialism, one may find animated differences among those which have been articulate. There is a wide fissure, with those who advocate the cause of the mill workers on one side, and those who advocate the cause of the mill owners on the other, dating largely from the troubles in Tennessee and North Carolina.

It need not be said, perhaps, that the South's "new industrialism" is largely a textile industrialism. Power developments such as those in North Carolina, in the mountains of north Georgia, and at Muscle Shoals in Alabama, have brought us opportunities for greater utilization of the elements for manufacturing. All over the South one may

find new factories, mostly small, utilizing chiefly the raw products of local communities. There has been no great movement of general industries to the South, because there is no occasion for general industry to move. The textile manufacturers had a different situation. Harassed by strikes in the North, they were offered a new supply of labor that knew nothing of organization and was glad to get whatever wages might be offered, plus a base closer to the source of raw products. Adequate power, realized only in the past few years, plus the labor situation and the differential in haulage of product, brought us a definite advantage in textile manufacture.

The new industrialism will continue to be preponderantly textile. Southerners realize also that it will not move south of the Piedmont escarpment; that, except for such specialized industries as fruit canning and naval stores, there will be no great industrial development on the coastal plains; but they know also that what happens on the Piedmont Plateaus will profoundly affect the course of their lives.

Before Gastonia, the newspapers had contented themselves with spurring and applauding chambers of commerce into greater activity in securing industrial plants and thanking Providence that the South was not afflicted with radicals. Editors had accepted, without question, the tradition that the cotton mills were instituted in the South after the Civil War to take care of unfortunate white people. Many of them were entirely apathetic to the condition of the people employed in the mills, because they regarded them as fortunate in having anything to do at all, and the money they made as just so much more in the community pocketbook. That the attitude of an employer who put 57 varieties of social agencies to work in his mills was en-

tirely benevolent, was simply accepted.

But Gastonia shocked southern editors out of their apathy. It presented to them the possibilities for unrest, for lawlessness, for communism—which is a bugaboo in the South as elsewhere—for economic disturbances occasioned by idle factories, and for social and economic injustice. Driven by a dawning consciousness of what might happen to the South if its industrialism were to repeat the history of Fall River, Lawrence, and Passaic, editors began to agitate, to take sides, and some of them to demand of mill owners that they make such manifestations as Gastonia unnecessary and impossible.

It has been fear of consequence, rather than any natural affection for the mill worker, that has agitated the southern press. It is the realization that, no matter how much we may have yearned and panted after a development that substitutes weekly wages for paltry seasonal cash, we shall have lost in the exchange if we give the peace and quiet, the homogeneity and the essential friendliness of our communities for an industrialism that forebodes labor troubles with attendant riots and bloodshed because its wages are the lowest paid in any industry; because its hours are longest; and because it employs, almost universally, the system of herding its employees into villages over which mill government, rather than civil government, is supreme.

PRESS UNFAVORABLE TO LABOR UNIONS

In all candor, also, it must be said that there is no essential sympathy, even among the more socially inclined editors, for the textile union. They conceive it to be the puniest, poorest-brained of the labor unions. They did not regard it seriously at all until

the American Federation of Labor threw its force behind it and virtually took over direction of its operations in the South.

The indifference to unionism is not confined to the textile unions. Labor is a factor only in the larger cities, because, since there has been no concentrated industrialism, there has been no labor force. The country has been preponderantly agricultural. The people have been so strongly individualistic that labor unions have not thrived nor enjoyed power. Not even agriculturists have been able to organize a coöperative successful enough to be compared even remotely with the coöperatives of California. Labor unions have not been a force either for action or for propaganda. Even in the endeavor to organize the mill workers, they have demonstrated an ineptitude at employing their weapons and presenting their cause.

Editors had rather not see the unions come. They would much prefer to see the manufacturers do what manifestly must be done to meet the standards of economic and social justice without having to be forced into it. But as *The Macon Telegraph* observed, "if the Southern industrialists do voluntarily what ought to be done, they will have displayed a brand of intelligence superior to that exhibited by any other group of industrialists in the recent history of the world." Hence, some of the editors have employed the threat of union invasion as a prod to the manufacturers.

The agreement recently reached, to abolish night work for women and children and to limit working hours to fifty-five a week, indicates that the manufacturers are willing to make concessions to forestall labor's demands. But the harder-headed editors realize that these concessions are only preliminary; that the mill owners must go

much farther if they are to avert trouble. They realize, too, that when discussion of mill villages and higher wages is reached, the manufacturers will be stubborn and reluctant and may even decide to turn and fight rather than yield.

Where the advocates of the mill workers' cause may be found when that time comes, was recently set forth by George Fort Milton, of the *Chattanooga News*. He said:

When the time comes—and there are symptoms of its beginning—be not unheedful of the rights of Labor. A low wage scale will not prove an unmixed boon to the South. If we do not protect our working men and women, who can prophesy the future of the South?

As in all great controversies, the equities are often mixed. Labor has no right to do violence, to sabotage machinery, to intimidate fellow-workers, or to disturb the peace. Yet it has other rights; those of collective bargaining and of recompense for toil somewhat proportioned to the skill and toil entailed. From an economic standpoint, the future of the South depends as largely on justice for workers as on any other things.

We may with propriety proceed from the labor problem to the more general one of industrialization. There is no use to say that industrialism is good or bad. The South cannot escape it, even if this were desirable. The question involved is: Shall the people of the South be the servants or the masters of the machines?

CONFLICTING VIEWS

Besides Mr. Milton's *Chattanooga News* and *The Macon Telegraph*, several other newspapers have been outspoken in the attitude that if mill owners themselves did not take the initiative in bringing about a revolution in the industry, it was inevitable that they would be responsible for distressing conditions that might come. These are *The Montgomery Advertiser*, the *Greensboro News*, the *Asheville*

Citizen, the *Raleigh News and Observer*, and the *Norfolk Virginian-Pilot*. On the positive side, they have urged recalcitrant manufacturers to support the more enlightened manufacturers who are endeavoring to set in motion reforms to clean up shoddy economic conditions and to make possible better social conditions. They have applauded the organization of the Textile Institute, which makes research into the industry's problems and is endeavoring, with some success, to bring it out of chaos; they have advocated the elimination of night work for women and minors as both a social and an economic menace; they have urged more stringent child-labor laws to force backward mill managers into obedience to community sentiment; and they have indulged in frank discussion of the mill-village system.

On the other hand, a few outstanding southern publications have championed the cause of the manufacturers without reservation. The *Manufacturers Record*, for instance, which enjoys a large circulation and almost reverential deference among southern industrialists, has been able to discover nothing but sweetness and light and beneficence in what has been going on in the South in the past decade. The *Charlotte Observer* has been belligerently hostile to anybody who dared to criticize the idyllic existence that might be found in an industrial community, and has referred contemptuously to those who have felt concern that that existence might not be as idyllic as it could be. As late as October 20, 1930, there could be found editorial reference by the *Observer* to "long-haired philanthropists from the North tearfully concerned over the sad fate of children who were working in the cotton mills." This reference was to those who endeavored, in 1912, to organize textile workers of North Carolina, when, to

quote the *Observer*, "the North Carolina manufacturers had taken the lead in securing the enactment of labor laws that served as a model for the nation." The *Observer* confesses that at that time, it "made a strenuous effort to divert their attention to the child labor in the sugar-beet fields in the West." The *Observer's* attitude is still the same. It remains confident that the manufacturers will continue in the lead to enact model labor laws, and it finds unction in conditions that are less than ideal elsewhere.

COMMUNISTIC INFLUENCE SEEN

The *Atlanta Constitution* has shown little concern about the social implications of drawing thousands of raw workmen down out of their mountain and hill homes into the maws of great machines. It has shared the *Charlotte Observer's* contempt for northern reformers; it has been vigorous in its denunciation of communism, and, whether deliberately or not, it has set up a mental affinity between communism and agitation for social and economic reforms affecting mill workers. Recently, when a writer for the *New York Herald-Tribune* made a survey of southern industrial conditions, the *Constitution* took him into its editorial sanctum for a thrashing:

In the main [says the *Constitution*] Allen Raymond attempts to be graphic and philosophic, but he cannot wholly lay aside the blue spectacles worn by professional Northerners when they scan the South. His views are highly colored by the economic and social prejudices that seem inseparable from a Northern mind dealing with Southern labor and living conditions. . . .

Mr. Raymond is altogether too cocksure and inclusive. . . .

The new mills and their villages, offering better living, schooling and social ambitions, have been of great benefit to many thousands of families who needed just such

transplanting and environment benefits. And if Providence gives to the Southeastern region better working climate, cheaper power, and labor able to live equally with Northern and Eastern labor on somewhat lower wages, the Eastern complaints should be made to God and not to the Southern industrialists and workers.

On the whole, whatever real labor and social problems appear in Southern industry are being honestly considered by the potential leaders of the Southern enterprise and will be worked out to just and humane bases against which the most critical and captious will not be warranted to complain.

Of the labor agitations in North Carolina and in Tennessee, where, it will be remembered, the American Federation of Labor, and not the Communists, endeavored to organize the Elizabethton workers, the *Constitution* said in 1929:

The violences in the Piedmont area are of peculiar nature . . . without similarity anywhere else in this country. They have resulted from the fomentations of trouble makers, not native to the population and scene of operation. Confessedly, they are agitators, belonging to the Communist Party. They are in the Carolinas and Tennessee to stir up warfare against industrial amity, religion and organized government.

David Clark, editor of *The Textile Bulletin*, official organ of the manufacturers, is also certain that what has transpired in North and South Carolina and in Tennessee is a thrust of the ungodly. He has envisioned in any effort that questioned the omniscience of the humanitarianism of the mill men, the curse of the Third Internationale. He has not been able to comprehend, apparently, that there are a great many people in the South who never have seen a Communist banner or heard a soap-box orator, who are unwilling to concede to the manufacturer that great paternal feel-

ing which makes all their workers children to be tended with loving care, their cups to be filled to overflowing with happiness and prosperity by anxious employers. Even the offer of labor unions to organize mill workers is, to Mr. Clark and to practically all other mill men, an insult, because it somehow implies that the labor unions have something to offer that has not been comprehended by the intelligence that guides the destinies of southern factories.

SENTIMENT EQUALLY DIVIDED

Because Mr. Clark and others on one side feel as they do, and because other southern editors feel as they do, the remainder of the country may be certain that when the battlefield of industrial Armageddon in the South shall have been reached, there will be something like an equal division of sentiment supporting the two armies. If there are those who believe unionism to be iniquitous, there are also those who believe that even if it does often submerge personality in organization, it is an effective instrument for elevating the standards of living. If there are those who believe that the wisdom and the paternalism of the manufacturers are sufficiently broad to meet the situation unaided by outside forces, there are others who have projected their minds through the social and economic implications and feel keenly enough about it to shout their warnings whenever the manufacturers seem to be steering the wrong course.

If there are those who conceive the mill village to be not only a desirable but also a necessary adjunct to industrial development, there are also those who, desiring the prosperity that comes with industrial development, yet see in the mill village an indigestible mass in the stomach of a community, or, if you prefer, a cancerous growth

that may flame into an ugly sore of discontent and trouble; a fertile ground for intolerance, for hatreds, for almost any sort of black prejudice that is founded upon ignorance or superstition or fear, and for any sort of radicalism.

If there are editors who fear the "menace of communism," there are others who are ready to say that the only outbreak of communism in the

South has been in a mill community and that communism, which demands revolution, does not thrive where there is no need for change.

If the mill owners have their editorial champions in the South's adjustment to her new industrialism, there need be no fear that the mill workers and social and economic justice will not have theirs.

Southern Industrialism: A Way of Economic Recovery and an Opportunity for Social Mastery

By FRANK P. GRAHAM

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IN Charlotte, North Carolina, faces and scenes pass in reminiscent and historical review before one's eyes, telling in vivid epitome the epic story of southern recovery. One recalls the boyhood scenes of a small town long set in the midst of cotton farms, reaching back with great traditions into the life of the old South, and more recently set in the midst of cotton mills, reaching forward with high promise into the life of the new. This country town within a generation became a merchandising, distributing, banking, and communicating center for the two states, the financial capital of a textile dominion, and the administrative metropolis of an electrical empire.

The story of this transition becomes increasingly significant as we watch the rise of the figures of industrial production in North Carolina: in tobacco manufacturing, from \$700,000 in 1870 to \$13,000,000 in 1900 and \$413,000,000 in 1927; in cotton manufacturing, from \$1,000,000 in 1870 to \$30,000,000 in 1900 and \$425,000,000 in 1927; and in furniture manufacturing, from \$67,000 in 1870 to \$1,500,000 in 1900 and \$53,000,000 in 1927. These figures are the deposits of the work of hundreds of thousands of people on farms and in factories; they express the momentum of the energies of a risen people, and are concretions of the fact that in the Piedmont South we are in the midst of the swift course of the rise of industrialism.

The industrial revolution has come south. No citizen in the Piedmont South is outside the range of its consequence. Its responsibilities are a part of our citizenship. We cannot with irre-

sponsibility shut our eyes to the lessons of the written records of industrial history and blindly repeat the economic wastes and human tragedies of a hundred years.

The tides of time and the currents of American history have joined in depositing four working principles, available to us in the South for our guidance now, in making the necessary adjustments to the changes involved in the resistless sweep of the industrialization of a rural state. These working principles are implicit in the ideas and the practices tested by the experiences of the western democracies in the hundred and fifty years since the power engine let loose the forces which have rearranged the structure of the modern world. On the preservation and the adaptation of these tested working principles turns today the search, in an industrial society, for that freedom of personality and equality of opportunity which this commonwealth was founded to win for all our people.

FREEDOM OF SPEECH AND ASSEMBLY

The first of these is the human ideal and American principle of liberty. We came into the world as an infant republic with liberty as the birth cry of our Americanism. Americanism, by being true to itself, can prevail over any subversive alienism. A free people have no cause to fear the dictatorship of any class. The fear of no economic theory, however fallacious, and of no social philosophy, however hateful, should terrorize us into the overthrow of the English tradition and the Amer-

ican principle of lawful freedom of speech and assembly which our Revolutionary fathers, over a century and a half ago, wrote into the American Bill of Rights. We cannot, as Americans, deny these Constitutional liberties to any persons on the free soil of America.

If any person, by license or crime or abuse of freedom, violate the law, then the American way should not be recourse to mobs and terrorism, but to due process of the law of the land. The test of the Bill of Rights is its application to those whose ideas are most despised.

The State of North Carolina, that refused to ratify the Federal Constitution until the Bill of Rights was made a part of its fundamental provisions, is not the commonwealth in which (thanks to the North Carolina press and Governor Gardner) a denial can long be made of the due processes of law in behalf of the civil liberties of locally despised persons who breathe in North Carolina the quintessence of that American freedom declared for in the little town of Charlotte one hundred and fifty-five years ago.

FREEDOM OF ORGANIZATION

Both a product and a source of freedom is the freedom of human beings to organize in behalf of their liberties and their life interests. One test of freedom is the equal freedom of organization.

The factory workers new to history found themselves without the inheritance of any form of organization or any industrial code. The craft guilds, long since dead, and the later sporadic organizations of journeymen were both unsuited to meet the needs of machine tenders. Groping around for a form of organization, they soon found themselves forbidden to join the new labor unions; those who persisted in joining were driven into hiding and hunted down by the law.

The struggle of industrial workers to organize and win the recognition of legislative bodies, the courts, and the corporations, is the latest chapter in the democratic struggle of human beings for autonomous organization around a great life need. This movement of the working people against great odds to win a simple share in the control of their own lives is one of the great human adventures of the last century.

Workers, who once worked with great skill through the entire process of creation, in their own cottages with their own tools, had, by the logical processes of the industrial revolution, lost the need of the old craftsmanship, lost the ownership of the tools and the place of work, and lost the creative satisfaction of skillful control of the whole process. The movement of working people toward organization, with all its defects and failures, is a movement for a compensating human share in the control of the terms on which they subject themselves to and cooperate with the marvelous processes of modern industry. Southern industrial statesmanship has no greater responsibility or opportunity than that of working out the basis and the structure of this creative cooperation in industrial production with just recognition of the value and the rights of capital, management, and labor.

Basic to this new constitutionalism in industry is the principle of collective bargaining, now fiercely in issue in the South, which recapitulates the historic principle and democratic idea of autonomous organization in the field of industry, and which is now established in practically all parts of the civilized world. Just as the American principle of liberty guarantees the freedom of individual capitalists and individual laborers to organize or not to organize, so the American principle of equal

rights makes it logical that, if a group of capitalists organize and bargain collectively through a corporation, corresponding groups of workers have the equal right and human necessity to organize and bargain collectively through a labor union. The principle of collective bargaining, which is at the center of the democratic movement in its latest phase, is resourced in the very springs of American democracy and will test the sincerity of our faith in the American idea.

FACT-FINDING AND THE SOCIAL PROCESS

The great principle of freedom of conscience, speech, assembly, and organization, denied in the several parts in successive historical periods, has been won in the religious, political, commercial, and professional life, and is being won in the last sector of the working life. But this freedom carries with it the responsibility of intelligence and enlightenment. Freedom and democracy make necessary an informed public opinion. Light is a condition of liberty under the law. Understanding is the resource of an orderly democracy. We not only need historical perspective, with its clear lessons of the patient processes of history, but also an analysis of the contemporary processes of social adjustment to the industrial advance. Fact-finding is a part of the technique of self-government.

In all the most progressive industrial nations, a constant series of studies, surveys, and analyses of the economic, social, educational, and religious life has been made by the organizations most concerned, by legislative hearings, and by governmental commissions of experts. Royal commissions have made studies of first one industry and then another—not, as the unhistorical-minded charge, to attack the industry but to diagnose its condition and build

it up. President Hoover, up against the difficulties of a low swing of the business cycle, despite our impatience, has recourse to fact-finding by commissions of experts.

One of the most successful textile manufacturers in the nation petitioned President Hoover last November for an expert study as a basis for crystallizing public opinion on the side of the textile leaders who have tried to bring about voluntary concerted action within the industry looking to the intelligent reduction of hours and the gradual elimination of night work for women and minors. Many of the farseeing and successful textile manufacturers consider that the now chronic sickness of the industry is not beyond diagnosis and cure. The southern textile industry, with all its natural advantages of proximity to the cotton fields, abundant power resources, and climatic factors in the cost of living, does not need to resort to such economically and humanly wasteful practices as long hours and night work for women and minors. More than one textile manufacturer has said that the thing that is needed to save the textile industry from further steps in self-destruction is an intelligent public opinion that will stimulate either concerted action within the industry against, or legislative prohibition of, policies contrary to business interests and human welfare. An analysis by competent experts should be helpful toward both of these ends.

The fact that many Southern church organizations and civic groups have declared for the value of such a study does not mean that it is their disposition to single out the textile industry for hostile attack. The textile industry has been singled out all over the world for consideration and discussion as incident to the day's news. Its sickness has been dramatized in the

headlines in a most tragic human way. Its low wages without regard to even lower competing wages in other industries and lower standards of living outside and nearby the industry; its night work for women and minors, and its long hours in certain tragic cases, misrepresentative of the industry as a whole, have stirred the social conscience of large groups of the American people. The intelligent answer is a study by those most competent to make it, by an appointment of the President of the United States.

The two most hopeful moves made since the Kendall proposal to Hoover last November are: first, the present effort of President Sloan of the Cotton Textile Institute to win voluntary agreement within the industry to a maximum day week of fifty-five hours and a maximum night week of fifty hours, and, second, the assembly of governors of the Southern states at the call of Governor Gardner for conference on the textile depression and unemployment. If these efforts fail, then the basic nature of the industry, its indispensability to our life and welfare, and its chronic sickness, make even more needful a nation-wide and nonpartisan economic and social diagnosis by a presidential commission of experts as a basis for further attempts at enlightened action within the industry and by the several states.

QUESTIONS REQUIRING RESEARCH

Some of the questions such a commission of experts could helpfully consider are:

(1) Would the industry find a way out of its chronic sickness and present chaos through vertical combination and the integration under one control of the successive functions of the manufacture of cotton all the way from the bale of cotton to the bolt of cloth in the wholesale market? Dr. Claudius T.

Murchison, from theoretical analysis, and Mr. H. P. Kendall, from successful business experience, say yes; others say no. The testimony and the analysis of other experts would be helpful.

(2) To what extent do the mills of the South Atlantic states lose their advantage of proximity to the cotton fields by the fact that our farmers have not yet learned to cultivate the indispensable long staple by using better seeds and cultivation? A member of the staff of the United States Department of Agriculture recently reports that North Carolina raises on the average 1,000,000 bales, ships out 300,000 bales, and imports 500,000 bales from the Mississippi Valley and the trans-Mississippi West. Cleveland County long staple, raised partly under the stimulus of the farmer-manufacturer, O. Max Gardner, is an example of the value of the proximity of cotton mill and long staple cotton to both the farm and the mill.

(3) In addition to these costs of an antiquated business organization and of antiquated cotton planting, to what extent is antiquated machinery a factor in the textile pathology? A successful manufacturer has said that there ought to be a replacement of a million spindles a year in southern mills.

(4) To what extent is overproduction a factor in the depression? What are the relations of the style of wearing fewer and shorter garments, the substitute fibers (rayon and silk), the undemobilized war capacity, long hours, and night work, to this overproduction?

(5) What, if any, is the relation of any of the following to the decline of the New England textile industry: social legislation, unionism, old machinery, absentee and trust ownership, distance from raw materials, and wage differentials?

(6) Does an industry in a region of

high social regulation dodge social responsibility by moving into a region of low social regulation, or does industrial history show that social legislation follows closely upon the wheels of any large industrial migration?

(7) What is the best way to secure fair and uniform regulations: from within the industry, by the several states, or by Federal legislation?

(8) What are the optimum points in the economic and social coincidence of the needs for the reduction of hours and the gradual elimination of night work for women and minors?

(9) What are the best methods of educating public opinion so as to make impossible any such ill-advised legislation as was recently proposed in a textile state to make forty-eight looms or any fixed number the maximum for one weaver, irrespective of differences in technical or working conditions? Would not the expert study itself be a step in such education of the public and be the most intelligent approach to the introduction of such new applications of scientific management as the labor-spread system?

(10) Has industrial paternalism—which arose out of local conditions and attitudes to meet great social needs—further usefulness, or should paternalism gradually give way to a more self-reliant individualism in community self-government?

(11) To what extent is the industrial situation conditioned by the agricultural? Some studies by Dr. Clarence Heer of the Institute for Research in the Social Sciences at Chapel Hill, North Carolina, show that wages in the unskilled and semiskilled southern industries are below the national rates in those industries, and that textile wages in the South are higher than agricultural wages and are also higher than wages in other unskilled and semiskilled industries.

(12) Does the agricultural depression, with its more distressing social consequences, relieve the social concern for the industrial depression, or does the acute agricultural unemployment make more necessary social legislation against low standards of competition for that oversupply of labor?

SOCIAL LEGISLATION A WAY OF ADJUSTMENT

The southern agricultural situation brings into focus the fourth historically vindicated working principle, namely, social legislation as a way of adjustment to industrial change. The making of these rules of industrial sportsmanship is a responsibility of industrial as well as political statesmanship. The present well-nigh impossibility of the successful organization of large bodies of unskilled working people in the South without the consent of the business management, places a great social responsibility upon the owners and the managers. To an observer of historical processes, it would seem the part of long-run wisdom for the business management to welcome the organization of labor and to encourage the best and most intelligent leadership to develop from within the labor ranks in the spirit of coöperation in more efficient production and larger human self-development.

The agricultural depression and consequent temporary oversupply of labor, the mechanization of the farms making more laborers permanently available for industry, the mechanization of industry making less laborers necessary, and the effect of some instances of unintelligent leadership of the unskilled and semiskilled workers in the South, all tend to make successful organization depend rather much for a time upon the consent and the encouragement of the business management. But the

momentum of the democratic idea and the slow-moving historical processes would indicate the certainty of organization sooner or later. Our attitudes now will somewhat determine the character of the leadership and the spirit and the methods with which the organization is carried through then.

This power to block the organization of workers, due to the juncture of many circumstances, carries with it a great social responsibility. This very frustration makes legislation imperative. English history shows that, without the checks of both labor organization and social legislation, the least scrupulous competitors took advantage of the oversupply of laborers to drive down the plane of competition to such levels as to threaten industry at its human source.

When the power engine came in England and, in its resistless course, rather suddenly dislocated the whole economic and social structure, the English people were caught unprepared and without a precedent for social guidance amid bewildering changes. They found themselves in the presence of the now dynamic power of steam and machines with all their potentiality both for tremendous industrial production and for social advancement of the standards of living of vast bodies of people. Without knowledge of the human implications, the people of England tried the way of unregulated freedom. They found after a time that the economic and social advance was made at great human costs to large bodies of the working people. A fierce, lawless competition drove the standards of the working life down to degrading levels. In the midst of mounting figures of vast production and astounding prosperity, the rulers of an empire forgot the depleted human beings who did the industrial work,

forgot the exhausted mothers and the sordid homes where children were born and where was cradled the future of the empire.

INDUSTRIAL DEVELOPMENT AND SOCIAL CONTROL

In defense of the very sources of human life, where was renewed the English race, and in defense of the commonwealth itself, the people of England slowly rallied where enlightened manufacturers led the way against the social treason that flaunted the flag of freedom. Enlightened manufacturers, organized labor, and statesmen made their now historic battle against the great odds of wealth, prejudice, and entrenched privilege. Lord Shaftesbury became the rock against which the tides of honest fear and misrepresentation rolled in fury and power. But he stood his ground and after slow years made his case for economically sound and socially wise legislation.

The English people in the seventeenth century, out of the power and the problems that came to them in the great commercial revolution, turned to that great rules-making conference, the Parliament of England, as their rallying center against a king who said he was above the law. In the great Bill of Rights they laid down the terms on which kings could rule in England. The English people in the nineteenth century, out of the power and the problems that came to them in the great industrial revolution, turned to their legislature to regulate the lawless power of the new industrialism. In a great social code of industrial sportsmanship, they laid down the terms on which the new kings could do business in England.

Against such regulation the same honest arguments were made in England in the thirties and forties, in France

and Germany in the later decades, and in New England in the seventies and eighties, and so on across the continent. Without learning much from the experiences of the people who had been through the transition from handicrafts to machines and from lawlessness to social control, each new industrial people has, almost independently, discovered the necessity of social legislation, or factory legislation as this form of social control is also called. They have learned their lessons from bitter experiences in economic waste and human tragedy. The same arguments, used against social legislation in England in 1840, have been independently used to stay the advance of social codes as they have logically and humanly evolved out of economic and social necessity in the wake of the march of the power engines around the world. These identical arguments are now being used in the many American states new to industry on a large scale.

Since they will yield their preconceptions and theoretical logic to the logic of facts, experience, and a larger social necessity, it is well to re-list these arguments here:

(1) Social legislation destroys the freedom and the initiative of the individual. On the contrary, it has been found not to destroy but to regulate and preserve this freedom and initiative for a larger number of people.

(2) Social legislation with regard to women and children violates the sanctity of the home. Actually, legislation in behalf of children and against night work for women and minors is a safeguard of home life.

(3) Reduction of hours promotes idleness and dissipation. As a matter of experience, physiological tests have proved that long hours at routine work make for dissipation as a relief from monotony and fatigue.

(4) Profits, it was argued, came from

the eleventh and twelfth hours of the day's work. It has been found that a reduction of such hours did not reduce production in the long run.

(5) Legislation imposes an unfair handicap in competition with nations or states with less regulation. It has been found that higher standards of work and efficiency and better morale more than offset this handicap. Business men in Parliament who had been strong opponents became staunch champions of the very legislation they had bitterly opposed.

(6) Legislation will drive industries from England to France, from Massachusetts to North Carolina, or from North Carolina to Texas as the case may be. English industries did not go to France, but France, through experience, came to the English code. Industries do not dodge legislation, but legislation follows industries as a matter of experience and social well-being.

(7) It is said in a summary way that legislation destroys industry and "kills the goose that lays the golden egg." Industrial history shows that the most highly regulated industries become the most economically and socially productive.

THE CASE OF ENGLAND

But it is said, "See what social legislation did to old England and to New England." As for old England, we might recall in this time of England's dark economic hour that social legislation was an accompaniment and one basis of Great Britain's commercial and industrial supremacy and prosperity for nearly a hundred years. Her economic plight today, based primarily on factors that transcend social legislation, is largely a matter of world economics with regard to textiles, iron, coal, oil, new mechanisms, and the war costs. All the mechanical

and social ingenuity of the British people is needed to work out of their present plight. Without social legislation and sane, intelligent, labor leadership, it is conservative opinion that Great Britain would, in her present economic plight, long ago have gone the way of economic ruin and revolution.

NEW ENGLAND—HELPED OR HINDERED?

Now as for New England, also pictured as going into decline on account of labor unions and social legislation, we find in a study made by the New England Council of Business Men that only two industries are slipping, the textiles to the South and shoes to the West. Cotton, new machinery, and a milder climate are in the South, and the cattle ranches and leather are in the West. Though New England once made over fifty per cent and now makes only thirty-five per cent of the shoes worn by Americans, New England makes more shoes than ever before in her history. Over a ten-year period, all other New England industries show remarkable expansion. According to the findings of these business experts as reported in the St. Louis address of Mr. H. P. Kendall, in thirty-five divisions of manufacturing, New England contributes one fourth of the entire national production. In twelve lines the manufactures of New England total more than the whole remainder of the Nation. Her primary horse power is one eighth of that of the country. Her per capita savings are \$530 as compared with \$322 for the Nation. This two per cent of the territory of the United States has ten per cent of the manufacturing establishments. The raw materials from three hundred foreign nations are mobilized for her factories and shops. With half the farm area and fewer workers, New England farms are yielding twice the production of

fifty years ago. Her bank clearings, power consumption, and exports are going up, not down.

New and highly profitable industries have come and are coming into New England since the passage of this alleged hurtful social legislation. The highest grade industries, with due regard for all factors, seem to seek a highly regulated area of intelligent social legislation, universal education, countywide libraries, and high standards in the working life. Social legislation, we find, follows in the path of industrialism not only as a social necessity but also as a positive economic and human good.

THINKERS FACING THE ISSUE

In recognition of this fact, thirteen committees representing the research and thinking of over one hundred North Carolina citizens, well known in the state and expert in the several fields, reported to the North Carolina Conference for Social Service at its eighteenth annual session in Charlotte, April 13-15, the results of their studies with recommendations for action and legislation, which, when carried through, would constitute a new social code for North Carolina. For the committee on industry Mr. Kemp D. Battle, the chairman, recommended the reduction of the sixty-hour week, the gradual elimination of night work for women and minors, the elimination of the fourth-grade clause in the state child labor law, a general survey of the working conditions of women and children, and coördination and reinforcement of provisions for inspection and enforcements under an appointive head.

On this committee of nine were two of the most successful, clearheaded, open-minded, young textile manufacturers of the state, the President of the State League of Women Voters, the Presi-

dent of the State Federation of Labor, and several college professors of economics and history. The chairman, one of the ablest and most historical-minded lawyers in North Carolina, is a director of and attorney for the oldest cotton mills now operating in the South, which have been owned by his family for over a hundred years. He spoke with sympathetic understanding of the difficulties of the management of the textile industry in its present plight. The proposals of his committee are so fair and clear-cut, and so economically and socially sound, that they have already won the enthusiastic support of a large and growing body of public opinion.

The two-year studies and analyses of the Battle committee and the twelve other committees are simple expressions of the fact that a considerable group of North Carolinians envisage the whole and various life of the commonwealth. By careful study they are trying to be intelligent about the economic problems and the social responsibilities of the agricultural depression and the industrial revolution in whose perplexing midst they now find themselves.

The spokesman for the committee on agriculture was Mr. Hugh MacRae, whose relentless economic analysis was the by-product of a quarter of a century of scientific farming and hard thinking about the foundations of our economic life. Some weeks ago he organized for the whole South a group of fact-finding and hopeful Southerners of the caliber of E. C. Branson, J. W. Harrelson, S. H. Hobbs, Jr., and D. R. Coker, for regional planning toward the rebuilding of old commonwealths between the Chesapeake and the Gulf. The twelve North Carolina committees, the Atlanta committee, the New England Economic Council, and the Southeastern Economic Conference,

organized by Governor Gardner and headed by Mr. Frank Page, and, on a national scale, the Cotton Textile Institute, are, in various but not conflicting ways, efforts to achieve a more human, balanced, and productive life.

SOUTHERN OPPORTUNITY FOR SOCIAL MASTERY

The states of the Piedmont South have come to grips with all the mighty possibilities of the industrial revolution. In the wake of the procession of the power engines around the world, pecuniary considerations have outweighed the technical and industrial, and industrial considerations have been too often paramount to the human and spiritual. The people of this section have the opportunity to make a joint and wise utilization of their geographic, economic, educational, and human resources in cooperation with its marvelous mechanical energies. Through the very value of intelligent social regulations and high human standards, the Piedmont South can give attractive economic and social welcome to highly skilled, highly waged, and highly productive new and diversified industries. The lists of crops and industries still missing from our economic structure are appalling.

Clear-headed, scientific, humanly disposed men and women in the South from within the industries and from within the commonwealths are pounding away at such fundamental things as pedigreed seeds, engineering skill, balanced production, scientific marketing and economic diversification. Diversified agriculture supplementing staple crops, diversified industries supplementing basic manufactures, and nine-months' schools and countywide libraries supplementing both, make up the groundwork upon which to build nobler commonwealths in the risen South.

In this region of the old South, where human slavery made its last stand in the modern world, industrialism makes fresh beginnings on virgin soil. We have the lessons in the tragedies of one and the opportunities in the power of the other to make a contribution to the cause of mankind and the history of civilization. We have the opportunity not only to install the new machinery seen on all sides and to utilize the new technique of our agricultural and engineering colleges but also to make

active and real, nobler human attitudes than have yet characterized the history of industrialization in either Europe or America.

No American pioneer who stood with axe or rifle along the fringe of the unconquered wilderness ever faced an adventure more thrilling than that which calls to us of the field and the shop, the school and the press, as we stand today with inquiring minds along the frontier of the vast possibilities of our yet unmastered civilization.

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TWELVE SOUTHERNERS. *I'll Take My Stand*. Pp. xx, 359. New York: Harper and Brothers, 1930.

Although we should not claim kinship with that "idiot who praises with enthusiastic tone every century but this, and every country but his own," most of us at one time or another have wished to revive a bygone era. To some of us the golden age of Athens may seem attractive, to others the spacious days of the great Elizabeth; but to the twelve gentlemen who have collaborated in the writing of this book, the Southern states as they were in the days before the Civil War have proved especially attractive. To them the South is a spiritual home, and if they are willing to admit that its life was not free from blemishes, they are equally clear in their descriptions of its charm and human kindness.

But the book is much more than an attempt to revive a past that is dead. Like many other thoughtful men, the authors of this book are not satisfied with the world in which they live. The products of the industrial revolution have increased the material wealth of the world, but they have not proportionately enriched the life of the individual. Economic riches that would have amazed an ancient potentate are the products of an industrial system which has subjected mankind to business cycles, unemployment problems, labor troubles,

and that spiritual hunger which comes from a life apparently lacking in purpose. It is not the machines themselves that are blamed, since machines are useful tools by means of which man may increase his leisure; it is that industrialism which is "the domination of the economic, political and social order by the notion that the greater part of a nation's energies should be directed towards an endless process of increasing the production and consumption of goods."

In revolt against contemporary civilization, the authors turn to the agrarian civilization which still exists in the South, claiming that it has something to offer to a world which is seeking a balanced philosophy. The civilization of the South, resting close upon the soil, was among the finest flowers of American culture, and its choicest fruits should be preserved from the encroaching industrialism of the "New South" so that they may form the seeds of a society which will enable its members to live more happily and with greater fullness. These writers do not seek a retrogression, for the man who has come to appreciate such a society "will muster up something like Roman fighting fervor to keep his chosen spot from falling ill of the 'Detroit' malady; but . . . in the same way he will resist any tendency to go too far 'back to the soil'" (p. 324).

While the book has its roots deep in

southern soil, it is in this sense subject to no geographical limitations. Many of the criticisms which it raises are sound, and the aims of the authors may perhaps best be summarized in the quotation from the writings of Confucius with which one of them begins his essay: "When balance and harmony are carried to the point of perfection, heaven and earth are in a state of complete tranquillity, and all beings receive their perfect development."

F. CYRIL JAMES

University of Pennsylvania

MITCHELL, BROADUS, and MITCHELL, GEORGE SINCLAIR. *The Industrial Revolution in the South*. Pp. xiv, 312. Baltimore: The Johns Hopkins Press, 1930. \$2.75.

This book is a symposium of twenty-six articles, appearing in various periodicals during the decade beginning in 1920, on the general subject of the development of the cotton manufacturing industry in the South. At a time when the shifting of the textile industry from New England to the South is causing marked changes in the economic structures of the two regions, the appearance of a book dealing with the subject is most timely. The authors have rendered a service in making conveniently available between two covers a number of articles describing the forces involved in the development of the southern textile industry, and indicating some of the problems in labor relations and welfare work awaiting solution.

The book as a whole is subject to the same criticism that may well be laid against most symposiums; namely, there is considerable repetition. Most of the articles review in more or less detail the historical background of the South's industrial development and facts relating to its present status. A reader is likely to feel that he is wading through an unnecessary amount of material to get a few kernels of information. It is doubtful if the difference in the viewpoints presented is sufficiently great to counterbalance this disadvantage. The authors, however, in their introductory remarks accept the indictment of having "sung the same song throughout," if such is the feeling of the reader. It is also some-

times difficult to understand why an article is classified under one heading rather than under another. Undoubtedly the contents of the book could have been presented much more briefly in a critical survey without the loss of any essential detail and with the advantage of saving a large part of the reader's time.

The title of the book is far too broad for its content. A more descriptive though perhaps less appealing title would be "The Development of Cotton Manufacturing in the South." This is the theme of the book, and only incidentally do some of the articles touch upon the broader implications of the forces now at work and the changes in progress in connection with southern industry. There are other important industries in the South besides cotton manufacturing, and they cannot be ignored in any description of industrial change in that region that purports to be complete. The field suggested by the title of this book is still virgin territory.

C. LOUIS KNIGHT

University of Pennsylvania

BERGLUND, ABRAHAM, STARNES, GEORGE TALMAGE, and DEVYVER, FRANK TRAVER. *Labor in the Industrial South*. Pp. xiii, 176. University, Va.: Institute for Research in the Social Sciences, 1930.

Probably "Labor Conditions in Three Southern Industries" would have been a more appropriate title for this monograph, for the authors make no attempt to cover the whole range of southern labor problems but confine themselves to certain aspects of the subject in the furniture, lumber, and cotton industries. Nevertheless, the book does give a broader survey of work, wages, and the wage earner's living in the South than does any other publication that the reviewer knows, and to that extent it justifies its ambitious title.

After two introductory chapters on the industrialization of the South, which "while faster and more revolutionary than in the North . . . has by no means transformed the South from an agricultural into a manufacturing community," and on the background of the workers, the authors present in the next seven chapters the results of their researches into wage rates, hours of

work, and employers' welfare activities. Their studies confirm the familiar story that workers in the South typically receive lower wages and work longer hours than do those in other sections of the United States. But their evidence does not confirm the well-worn argument of such publications as the *Southern Textile Bulletin* and the *Manufacturers' Record* that cheap housing, fuel at cost, and welfare services provided by employers are sufficient to raise southern real wages to levels prevailing elsewhere.

This is not true even for textile workers, the chief beneficiaries of such services, while it is even less true for furniture and lumber employees; for in the furniture and lumber industries, extensive welfare systems are uncommon and there are, in effect, only inconsequential housing and fuel subsidies to wages. Although many lumber companies provide housing for their employees, they commonly charge rentals sufficient to compensate for their outlay; while furniture companies offer little of either cheap housing or cheap fuel.

Nor do the authors believe that lower living costs make up for low money wages. After pricing a considerable range of food commodities in some fifty towns and cities of the South and comparing results with Bureau of Labor Statistics reports on food costs in Northern cities, they conclude that "with the exception of meats (which are cheaper, although probably not of as good quality) the cost of food items in the South and . . . in the North is practically the same."

To the student of Southern labor the most interesting and informative parts of the book are those that deal with housing and welfare work in the furniture and lumber industries. The chapters on these subjects, based upon field surveys, are fresh and illuminating and represent the breaking of new ground. On the other hand, the authors have traversed familiar territory in discussing wages, hours, and welfare work in textiles, and have not brought out new points of importance. In view of this, it seems unfortunate that they did not do more exploring. But presumably the Institute will carry on with its labor studies. The present monograph is scrappy and incomplete; a useful record, however, of re-

search done to date. May it be looked upon merely as a progress report?

HARRY M. CASSIDY

University of Toronto

SCHWENNING, G. T. (Ed.). *Management Problems: With Special Reference to the Cotton Textile Industry*. Pp. xiv, 266. Chapel Hill: University of North Carolina Press, 1930. \$2.00.

This volume brings together eleven addresses on management problems which were presented, with several exceptions, before the University of North Carolina Student Branch of The Taylor Society. Five of the papers deal with the cotton textile industry; the others cover personnel problems, the application of scientific management principles to marketing and to libraries, and the problem of industrial power. The introduction is from the pen of Dr. H. S. Person, Managing Director of The Taylor Society.

At first glance the collection appears to lack unity; but this is more apparent than real, for, throughout the diverse discussions, stress is laid on the necessity for an experimental approach to problems of production and personnel management. The three articles which trace the evolution of the management structure and policies of The Kendall Company are especially well done and timely. This company, which owns nine cotton textile plants, five of which are in the South, has made notable progress in adapting the principles of scientific management, as worked out in metal-cutting establishments, to the textile industry. The stimulus of an address of this kind on students, many of whom will undoubtedly go into the textile industry, will do much to raise the plane of industrial management.

Professor Murchison's paper, entitled "Management Problems in the Cotton Textile Industry," consists of an analysis of the existing organization of the industry, so presented as to make a case for the necessity of vertical integration of present units. His conclusion will not be accepted by every one, especially those who have watched the attempt in other textile branches.

The University of North Carolina is to be congratulated for realizing the possibili-

ties which extra-curricular activities of the type of this student society have for self-education.

A. H. WILLIAMS

University of Pennsylvania

SHUMWAY, HARRY. *I Go South*. Pp. vi, 90. Boston: Houghton Mifflin Company, 1930. \$2.00.

I have never thought that complete ignorance of, or lack of ideas about, a subject was a particularly good qualification for writing on it. After reading Mr. Shumway's book, I still do not think so.

Several Boston business men (selling agents for a group of Alabama cotton mills) were looking for a man to go South to write the whole truth about conditions. They chose Mr. Shumway because "he had never been south of the Mason and Dixon line, because he knew nothing whatever about the cotton business," and, as is explained in the introduction, because he "had no prejudices of any sort" and had a mind "like a piece of photographic film, ready to receive impressions."

Undoubtedly Mr. Shumway received the impressions recorded in his book; no doubt he saw fine mills with roses on the fences; comfortable houses with gardens, radios, and automobiles; no children working, pretty girls wearing silk stockings, and three men pensioned by the company; good schools, largely company-supported; and recreational facilities including "one of those things that optimists dream about and that make strong men tremble with joy . . . a golf course where you can play all day for twenty-five cents!"

It is likely that Mr. Shumway wanted to balance the picture when he mentioned in passing that there were a very few pinched faces and round shoulders, and said it might improve the houses to vary the style and use a brush instead of a spray in painting them.

I am convinced the author was honest in saying he concluded that "mill work doesn't do anything to you," and that the cemetery was the only thing he saw which depressed him.

I believe one of the important points Mr. Shumway wishes stressed is that the Communists will do to "men and women and

children's souls what the boll weevil does to the cotton blossom"; and that the crux of his conclusions is brought out in the question asked after showing the very favorable living conditions provided by the five mills he saw—"Would labor unions do as much, or do it as well?"

This book with its naïve honesty does not contribute any information, ideas, or understanding, and does not present an adequate picture of even one side of a complex situation.

ELIZABETH YATES WEBB

Vassar College

MURCHISON, CLAUDIUS T. *King Cotton Is Sick*. Pp. xi, 187. Chapel Hill: University of North Carolina Press, 1930. \$2.00.

In spite of its title this book is limited to a discussion of the cotton textile situation in the United States. In a book with such a general title the reviewer would expect to find some discussion of the problems confronting the producer of raw cotton, which are quite as serious as those with which the textile industry is suffering, and also a discussion of the world textile situation in general. Within the field chosen the book is an important contribution, although it is doubtful if the problem is so simple and the solution so obvious as a reading of the book would indicate.

Murchison finds that the difficulty began about 1923, largely as a result of the decline in the so-called "staple lines" and the increasing importance of style changes, under which the author includes changes in specifications by industrial users of cotton goods. Cutthroat competition between small independent units, with each step in the manufacturing, finishing, and selling process controlled by a different group, is also regarded as an important cause of the unsatisfactory situation. Mills produce blindly and hope to sell their output, but in far too many cases profit has resulted only from increases in the raw cotton market.

As a cure for the ills of the industry vertical integration in fairly large units is suggested. Control of manufacturing should rest with the selling executives, who would decide what should be manufactured in the light of what they expect to sell.

This is a reversal of the present practice, where agents are employed to sell what the mills have produced.

WILLIAM G. REED

Philadelphia

JOHNSON, CHARLES S., *et al.* *The Negro in American Civilization*. Pp. 538. New York: Henry Holt and Company, 1930. \$4.00.

This work is the outgrowth of the National Interracial Conference which was held in Washington, D. C., in the Fall of 1928. As a part of the preparation for this conference, Professor Johnson was asked to prepare a "Data Book" to be presented to the delegates attending the meetings. In addition he was asked to prepare special surveys of a more extensive nature for the assistance of the principal speakers on the program of the conference.

The first portion of this book represents an expansion and revision of the data material of the conference. The second portion consists of the papers read by the various speakers appearing on the program of the conference, including Louis I. Dublin, Raymond Pearl, Thorsten Sellin, W. E. B. DuBois, Herbert A. Miller, and others.

The part prepared under Professor Johnson's direction constitutes the most comprehensive and timely compilation of data upon the American Negro that is now available. It is particularly valuable in that it utilizes a mass of unpublished material culled from the records of the Urban League and similar organizations and from various research projects. Some chapters are of greater value than others, partly because they contain more significant material and partly because they are more carefully done.

The reviewer is particularly impressed with the material dealing with Migration, and with Health, Causes of Death, and Racial Susceptibility and Immunity. This latter group of chapters serves to explode a number of *clichés* that have been current among even specialists in the field of race relations. It shows that the Negroes exhibited a lower death rate from tuberculosis than did the whites in many sections of the South before their emancipation. One ante-bellum "authority," indeed, is cited

as stating that Negroes possessed a special immunity against tuberculosis. Further data are cited from the World War experience of the United States Army, suggesting that even at the present time the Negro exhibits a lower tuberculosis morbidity rate than the whites in certain portions of the South. Material is also presented tending to show that the incidence of venereal infection among the Negroes has been considerably exaggerated by many observers. Particularly significant are the figures cited from a study made in Mississippi, which indicate that *ophthalmia neonatorum* (one of the sequelæ of venereal infection) is much less prevalent among Negro than among white children. The section on Racial Susceptibility and Immunity is not conclusive, for the data presented by Professor Johnson in his section of the work point to conclusions different from those presented by Pearl in his paper. The net result of a perusal of this material serves, at least, to make the observer chary of such sweeping generalities in this respect as have been made in times past.

Another interesting feature of the work is the wide use of case material, of letters, interviews, and so forth, that serve to give vividness and concreteness to the presentation.

As has already been suggested, the work suffers from unevenness. Certain chapters, such as that dealing with Negro Colleges and Universities, are little more than data summarizations, and might well have been put into an appendix. It is also unfortunate that in certain instances specific references were not given to data cited in the text, although in some cases this seems to be due to the fact that the author has quoted letters and similar material.

NILES CARPENTER

University of Buffalo

KENNEDY, LOUISE VENABLE. *The Negro Peasant Turns Cityward*. Pp. 270. New York: Columbia University Press, 1930. \$4.25.

This is an analysis of the many recently published studies of social problems among urban Negroes in the North and a statement of some general conclusions which may be drawn from them as to the future of

the Northern Negro urban population in industry, housing, recreation, crime, politics, and health. It is a most valuable book. Professor F. A. Ross says in the foreword, "No finer introduction to the study of modern municipal conditions in the North is available today."

Miss Kennedy has divided her work into three sections, the first being introductory. Here she describes the characteristics of recent Negro migrations, the economic, social, and socio-psychological causes, and the nature of the material she consulted. The second section is devoted to the economic effects of the recent migrations: changes in wages and hours, types of occupations, relations between white and Negro workers, and the appraisal of Negro workers by white employers. The third section contains conclusions and recommendations.

The treatise is serviceable in that it contains an Appendix with a general Bibliography which is reclassified by subject matter and page. Unfortunately, Miss Kennedy did not list many unpublished manuscripts filed for reference by certain welfare organizations.

EUGENE KINCKLE JONES

National Urban League

REID, IRA DEA. (Department of Research and Investigation of the National Urban League.) *Negro Membership in American Labor Unions*. Pp. 175. New York: The National Urban League, 1930. \$1.00.

This study meets an acute need which has been shared by all who have wished to hold an intelligent opinion regarding the place of the Negro in the labor movement, and have been restrained by the inadequacy and the lack of organization of pertinent material. The purpose of the study is to present facts so that the reader may judge for himself the status of the Negro in American trade unions. The work embodies a brief history of the relationships which the trade unions have or have not carried on with the Negro. A keen, detailed analysis is made of the Negro in national unions, in independent unions, and in organized labor in about thirty of our cities, North and South. The section dealing with the Southern cities is peculiarly illuminating.

The material is presented in a scholarly, scientific way. The field from which it is drawn is sufficiently comprehensive to present fairly the varying attitudes manifested by the trade unions toward the Negro, from his status as a strike breaker to his admission to equal membership with the white worker. Indirectly, it is a searching criticism of the integrity and the impartiality of the American labor unions.

HELEN BRYAN

Philadelphia

WHITFIELD, THEODORE M. *Slavery Agitation in Virginia 1829-1832*. Pp. viii, 162. Baltimore: Johns Hopkins Press, 1930. \$1.75.

This work is a brief development of the proslavery policy of Virginia. There are not many new facts in the book, for it is more of a synthesizing effort than an original production.

From this volume we learn that at first there was a preference for the labor of white indentured servants, but Negro slaves were forced upon the colonies by pressure from slave-trading England, and by the end of the seventeenth century the whites yielded to the Negroes. Considerable antislavery sentiment developed, however, and manumission was facilitated. This tendency toward liberation was checked when slaves in crude form without initiative were turned loose upon society to become vagabonds. It was not until colonization seemed feasible that any considerable number of slaveholders could be induced to manumit their slaves.

When this movement struck snags in the execution of its plans, Virginia finally divided on the question as to whether emancipation was the best policy, and with the industrial revolution apparently making cotton king, the majority of Virginians became proslavery by the year 1830. That matter was adequately threshed out in the Convention of 1829-1830, when the western counties, with no love for the Negro, arrayed themselves against the aristocratic eastern counties which tried to make every interest of the state secondary to that of slaveholding. The representatives of the slave interests won in the contest with the pioneering mountaineers

who spoke out boldly in that convention; but the question of the extermination of the evil came to the front again in the General Assembly immediately after Nat Turner's insurrection of 1831, just as it had almost done in 1800 when Gabriel's plan for an uprising of the slaves was detected. These events furnished occasions for battles between the slaveholding interests and the liberty-loving mountaineers, in which the former won a second time and committed the state to the proslavery agitation so that abolitionists were not tolerated in the eastern section after 1840.

In the development of his theme the author did not give adequate attention to the difference between the eastern and western sections, failed to discuss thoroughly the theories of the mountaineers as factors in determining the early attitude of the state toward the institution, and neglected to bring out the extent of the violence of the agitation in the Conventions of 1829-1830 and 1850-1851, leaving sectional sores which were never healed, and which in 1863 resulted in the establishment of West Virginia. While West Virginia was not antislavery, the domination of the state by shortsighted men who thought of nothing but the protection of their peculiar species of property, alienated the western section, which in spite of itself had to develop with the spirit of the rising West.

CARTER G. WOODSON

The Association for the Study
of Negro Life and History

TURNER, LORENZO DOW. *Anti-Slavery Sentiment in American Literature Prior to 1865*. Pp. viii, 188. Washington: The Association for the Study of Negro Life and History, Inc., 1929. \$2.15.

From whatever standpoint this book is judged—as literature or history or both—one cannot overlook the unmistakable evidences of painstaking and scholarly research over a wide field, which includes essays, drama, poetry, sermons, orations, letters, journals, diaries, biographies, and books of travel.

In the Appendix, Dr. Turner has reprinted the story "M. L.," by Louisa M. Alcott, which was published serially in the *Boston Commonwealth* from January 24

to February 21, 1863. The difference in treatment of the mixed blood theme in 1863 and in 1930 probably is a fair index of the change of attitude which even abolitionist America has experienced in the intervening years. There is a splendid Bibliography at the end of the book.

ELMER A. CARTER

New York City

CUTTING, ELISABETH. *Jefferson Davis: Political Soldier*. Pp. x, 361. New York: Dodd, Mead and Company, 1930. \$5.00.

Quite frankly, this is pretty trashy biography. To the historian it reveals no new material nor new interpretation of the old. To the lay reader, for whom the book was patently written, it makes neither Jefferson Davis nor his associates living or entertaining figures. It is difficult to realize just what compelling and romantic people many of them really were. What reader could gather that Alexander Stephens was as knightly a personality as the Chevalier Bayard, that Judah P. Benjamin was as colorful in an Oriental way as D'Israeli, that Lee was one of the most inspiring military leaders in the history of the world? Is one, anywhere in the book, led to the thrilling realization that Davis himself, with all his faults, came perilously near to dividing this country and organizing on this continent a great slave empire?

What more can I say?

ALPHONSE B. MILLER

Philadelphia

WISNER, ELIZABETH. *Public Welfare Administration in Louisiana*. Pp. xvii, 239. Chicago: University of Chicago Press, 1930. \$3.00.

This study derives especial interest from the fact that it relates to the one state which has, in the course of its legal history, remained largely without the sphere of the common law. The evolution of Louisiana institutions has long been complicated by a certain confusion of French and American law and custom, consequent upon the several sudden transitions from one national authority to another. Dr. Wisner relates the history of the state's public welfare administration from 1803 to the present,

giving primary attention to the care of the sick poor. A large mass of material has been examined and a painstaking and intelligent account is given of the development of hospitals, asylums, and the state penitentiary. The reader receives the impression that on the whole the state's welfare work has been unenlightened and ineffective until a very recent period.

As its title implies, the study is primarily concerned with administrative evolution rather than with a description of social conditions in themselves. Even the story of actual conditions in the hospitals and asylums is treated as incidental to their legal and financial development. One result of this is a somewhat monotonous, though apparently necessary, accumulation of statutory details. There can be no question that Dr. Wisner has made an important contribution to the growing literature on the social history of the South and on the history of American welfare institutions in general.

RICHARD H. SHRYOCK

Duke University

CAPPON, LESTER J. (Under the Direction of Dumas Malone.) *Bibliography of Virginia History Since 1865*. Pp. xviii, 900. University, Va.: Institute for Research in the Social Sciences, 1930.

This bulky volume reveals the results of a careful exploration of all important repositories of material relating to the recent history of Virginia. Most of these are located within the state or in Washington; on the other hand, the collections of Boston and Cambridge, of the New York Public Library and of the McCormick Agricultural Library in Chicago were also examined and listed. The results of careful analysis are presented to us under eleven classifications. The first section lists Virginia bibliographies and indexes. Then follows a logical classification of materials relating respectively to economic, social, political and constitutional, military, educational, and religious development. The last four sections deal with local history, biography, literature and art, and newspapers.

To one trained to look for such classifications, an array of 6,242 items arranged alphabetically under the appropriate head-

ings is available for his choice. In each case, abbreviated references inform him in what repository or repositories, the item is to be found. This volume means an invaluable piece of spade work for the historical scholar. It is possible that a very broad preliminary heading of "general materials" might have made it simpler to list items not easily classified under the separate topics, and, arranged in chronological groups, might have proved extremely comforting to persons pursuing a general interest. In the same way, the Index which reflects the classifications of the text might have been more useful.

But this is the counsel of perfection. As matters stand, the book collector, the librarian, and the historian are under substantial obligations to the compilers and publishers of this well-printed volume.

ARTHUR C. COLE

Western Reserve University

HAINES, CHARLES GROVE. *The Revival of Natural Law Concepts*. Pp. xiii, 388. Cambridge: Harvard University Press, 1930. \$4.50.

Bernhard Windscheid many years ago in a rectoral address said, "It is an ancient never-ending dream of mankind that there is a rigid and unchangeable law which is the law of reason." The view that there is a standard of right external to legal prescriptions is shared by the learned as well as the unlearned. The only difference is that the unlearned never succeed in making their ideas comprehensible beyond the expression of emotional belief.

It is one of the peculiarities of Natural Law that it is neither natural nor law. The term is unfortunate, but the idea back of it has often prospered because of its verbal misfortune. But the misfortune goes in another direction; the nebulousness of the idea has spared it from the fatality of crystallization. We say fatality because if made precise, many of its variants would have quickly disappeared when tested by the acid of the reason to which it appeals.

Natural law is an idea which not only has endured but which has in it elements of indestructible truth. Juridical law is the law of the State; but natural law is that body of truth which is and must be, with

varying interpretations from generation to generation, the basis of valuation of all juridical law. It does not seem difficult to justify this statement. The essence of any legal rule resides in the purpose of it. The valuation of that purpose falls into the realm of a process of reasoning, if that reasoning is not dominated by purely egoistic impulses, which, going beyond the individual, may engage reflections touching human society as a whole and even the totality of reality. In this sense, natural law becomes what it once was in fact but not in name, the philosophy of law.

It is not likely that anything new can be advanced concerning the general theory of natural law. Certainly there is no need here for such a discussion. The literature which has developed on this topic within the last two centuries is itself a curious phenomenon. Professor Haines has set out a selected list of titles covering eighteen pages of his book.

Taking the view expressed above, the appearance of natural law ideas in the development of American Constitutional law is not accurately a "revival" but is rather a continuation in a new application of ideas which, from the time of their formulation, have flourished without break or interruption. The labels, it is true, have changed. That is a great advantage, at least for clearness of thinking. The learned classes now write their natural law under other titles, but the layman and unfortunately many of our judges, unconscious of the developments that have overtaken the theory of law, continue to think and speak in the frames of the old categories.

The labor of Professor Haines was worth while. The best part of his book is that dealing with the social and economic ideas which have motivated the development of Constitutional doctrines by the courts. The author's introductory discussion of natural law, leading up, as was necessary, to his chief inquiry, is satisfying and takes due account, in broad outline, of what already has been written. The cases involving natural law doctrines have not been exhausted; nor was that necessary, since they fall into favored groups of ideas, adequately noted by Professor Haines, and chiefly involving Constitutional law.

The author's method of treatment is primarily expository. An attempt to deal with the numerous variants of natural law on a critical basis would easily have extended this work to the compass of another separate volume. For example, an adequate discussion, in its ramifications of economics and of logic, of Stammler's *richtiges Recht* would have required many pages. Professor Haines has accomplished the task set before himself, and the result at its best should be to create a critical attitude on the part of the bar and the bench when natural law is invoked. Appeals to natural law often have been mere declamations on reason and justice, concealing economic, political, or class prejudices behind a verbal lattice work of poetic words.

A. KOCOUREK

Northwestern University Law School

CATLIN, GEORGE E. G. *A Study of the Principles of Politics*. Pp. 469. New York: The Macmillan Company, 1930. \$6.00.

To the sparse list of modern books on the principles of politics, Professor Catlin's study is a welcome and distinctive addition. Regarding politics as essentially the study of social control, he devotes a number of significant chapters to such themes as liberty and authority, conflict and solidarity, balance and convention, equality and status, offering admirable summaries of the fundamental issues regarding the distribution, the scope, and the function of the distribution of organized power in modern societies.

Making liberal use of his wide reading, the author states and illustrates his problems in a very catholic and effective manner. He draws on psychology and on sociology no less, but rather more, than on jurisprudence and on "political science" in the usual acceptance of the term. Taking so wide a range, he deals with the nature and kinds of social groups, class and caste, the position of women in modern society, nationality, education, and numerous other topics. Consequently, his treatment taken as a whole is rather discursive, although illuminated by apt and often penetrating statements. It is in fact a free discussion of

the general problems that underlie the life of men in states, rather than a systematic exposition of the problems of government.

The discursive quality of the book arises from two characteristics of the author's approach. On the one hand, he is fond of citing the doctrines and the pregnant sayings of the political and social thinkers, from Aristotle to the present. It is aptly done, and some of the best things are in the footnotes; but it tends to delay the argument. On the other hand, the author starts with an unusual definition of "politics," following the lines of his earlier work on *The Science and Method of Politics*. He rejects the viewpoint which regards politics as the study of the state. For him, it is the study of a human relationship which the state, but by no means the state alone, reveals. He would use the term "civics" to signify the study of the state, while "politics" is the study of "the act of human or social control" (p. 69).

Concerning definitions there is no need to quarrel, although the usage of the author is apt to create confusion in view of a well-established tradition. Politics, he insists, is "the study of an activity, not of a thing." In other words, it is dissociated from the study of a particular social structure. But the activity ramifies everywhere in human life, is found in the church and the family and the economic order and the social club.

Professor Catlin thus sets himself an extremely elaborate and far-reaching quest—one whose magnitude he perhaps fails adequately to realize; for the discussions which follow, suggestive and broad-minded as they are, do not fulfill the expectation that he is going to analyze the nature and the ramifications of the activity of control by man over man. Instead, we have certain admirable but general restatements of the problem of liberty and authority.

Although the volume cannot be said to fulfill the expectations of the reader who accepts the author's definition, it is a distinctive contribution to the latter's subject. He gives *inter alia* a penetrating study of the nature of political (or social) laws, with excellent comments on the formulations of Mill, Spencer, Gumplowicz, Znaniecki, and others. He offers an admirable analysis of the main types of social grouping. He

comes to grips with the philosophical question of the relation of the individual to society. He has some good things to say on the balance of groups and interests in a society. But one feels that the author moves on a diagonal between politics (in the traditional sense) and sociology, and that he has not quite found the focus which would give unity and system to his work. It is an interesting and promising attempt, which may prepare the way for a more assured and more specific contribution on his part.

R. M. MACIVER

Columbia University

CARPENTER, WILLIAM SEAL. *The Development of American Political Thought*. Pp. vi, 191. Princeton: Princeton University Press, 1930. \$2.00.

In these essays Professor Carpenter approaches the study of American political theory from a point of view at once novel and promising fruitful results. He disclaims the belief that there is any American political theory in the sense of a systematic development of abstract political speculation by American writers. Of constructive systematic thinkers in the field of politics we have had but few—Calhoun is almost the only one in active political life—while most of our academic writers on politics have contented themselves with reflecting the trends of thought prevalent in Europe a generation or two before their time.

With us, political theory has meant not systematic speculation, but the ideas and concepts which from time to time have been seized on as telling arguments in the course of practical political contests, and which have received their development from the outcome of such contests rather than by methods of intellectual analysis. In consequence the development of American political thought becomes an interstitial aspect of the development of American politics—a collateral phase of the partisan strife out of which alterations and amendments of our political institutions have issued.

This is the sense in which Professor Carpenter conceives the subject matter of the studies in the present volume. They comprise a series of footnotes or appendices

to political history rather than a consecutive story of successive intellectual efforts.

Yet in one marked sense there is continuity in the story—American political thought has gotten on with relatively few ideas and doctrines, and these have persisted and reasserted themselves again and again in substantially the same form. Professor Carpenter has selected the most persistent to build his chapters around—the social contract, the separation and balance of governmental powers, democracy, individual liberty, majority rule. All these ideas had already emerged in the eighteenth century, some of them in the seventeenth, and most of them received their fullest and ablest discussion and elaboration in the period of the American Revolution and the subsequent era of constitution building.

This book sheds interesting new light on the thought of the earlier period from a study of little known pamphlet material, English as well as American. From such sources it is shown that the American theory of representation which still requires that the representative must reside in the district which he represents is a survival of the primitive English view which regarded the representative as a mere agent or proxy of his individual constituents (p. 91), and therefore limited by the mandate or instructions received from his principals (p. 45).

The question of majority rule first came explicitly to the front in the state constitutional conventions of the first half of the nineteenth century, which were faced with the demand for abolition of property qualifications for voting. Here Professor Carpenter gives a convenient résumé of the discussion of the rights of property versus manhood suffrage in the Massachusetts convention of 1820, the New York convention of 1821, the Virginia convention of 1829, and some of the early conventions in Western states. It is interesting to be reminded that Daniel Webster expressed the view that "it is the nature of our institutions to found government on property."

For the paucity of creative political thinking in this country in the last hundred years, Professor Carpenter offers what is undoubtedly the correct explanation. "The foundations of political order in this coun-

try have long been unchanged largely because the energies of the people have been expended in the exploitation of the rich resources of the Continent. As long as the promise of American life assures to the individual more abundant riches, it is difficult to see why the development of political theory on this side of the Atlantic should be more fruitful. For it is undoubtedly true that political ideas mature under the stress of deep-rooted controversies. Some one has said in paraphrase of Carlyle that it is a happy country which has no political theory, for the growth of political theory indicates that a revolution has just occurred, or is about to occur" (P. 165).

JOHN DICKINSON

University of Pennsylvania

JOHNSTON, HENRY ALAN. *What Rights Are Left*. Pp. x, 177. New York: The Macmillan Company, 1930. \$2.00.

Though we have had national prohibition for nearly eleven years, the general public is surprisingly ignorant of exactly what the law prohibits and what it permits. Mr. Johnston deals with the national prohibition law as it affects the rights and privileges of private citizens. The study is based on a careful legal analysis of the national prohibition law and a review of all Federal Court decisions on prohibition cases. Mr. Johnston's book may be accepted as authoritative in its own field, for the manuscript was critically read by Professor Howard McBain of Columbia University, and Mr. Courtlandt Nicoll and Mr. George Roberts, two New York attorneys.

The following questions are dealt with: the right to possess liquor for personal use; the exemption in the Volstead act of "non-intoxicating fruit juices"; what constitutes legal and illegal search and seizure; the exemption extended to members of foreign embassies on American soil; the practical exemption of the Philippine Islands from the Volstead law; why bootleggers are granted exemption from prosecution under the prohibition law in paying their Federal income tax; and so forth. The full text of the Eighteenth Amendment and a summary of the national prohibition law, with all

amendments, are given in the first chapter. In the Appendix are given the full text of the United States Constitution and the Federal statute on search warrants.

JOHN C. GEBHART
Association Against the Prohibition
Amendment

LEE, HENRY J. (Ed.). *Charter of the City of New York and City Home Rule Law* (Amended to May 1, 1930.) Brooklyn: Eagle Library Publications, 1930. \$3.50.

Here we have a careful revision of the New York City Charter (Laws of 1901) brought down to date by the Municipal Affairs Committee of the New York City League of Women Voters under the direction of Helen Potter Hanson, member of the bar, together with the City Home Rule Law (Laws of 1924) with all the amendments that have been made to either since their respective enactments.

The work, which embraces 328 pages, has been carefully done and provided with an adequate Table of Contents and Index. Repealed sections have been indicated. It is to be hoped that the next edition will embody references to the court decisions interpreting the various sections. Some idea of the physical extent of the act may be gathered from the statement that it contains 1,487 sections. There has been no popular priced edition of the Charter since 1925 and the *Brooklyn Daily Eagle* is entitled to high commendation for its public spirit in publishing this much needed volume.

CLINTON ROGERS WOODRUFF
Philadelphia

WHITE, LEONARD D. *The Civil Service in the Modern State*. Pp. xxi, 563. Chicago: University of Chicago Press, 1930. \$6.00.

The International Congress of the Administration Sciences held its first session in Brussels in 1910, the second in the same city in 1923, and the third in Paris in 1927. These conferences bring together a distinguished group of high officials, actively engaged in the conduct of the administrative services of the leading countries of the world, and students of administration. They have begun to build up a doctrine of

administration, as Dr. White points out. This volume is not a part of the proceedings, but was conceived shortly after the latest conference, and embodies a collection of the fundamental civil service principles of fourteen countries: Italy, Germany, Great Britain, Canada, Australia, France, the United States, Austria, Roumania, Belgium, Switzerland, Japan, Sweden, and Norway. All, however, were brought together under the auspices of the Congress.

It is significant of the backwardness of administrative service in the United States, that her representative on the board of officers is a professor of administration. Other countries are represented by actual administrators. The collaborators in this volume, however, are largely college professors, at least ten out of thirteen. Dr. White's contributions are easily the most important, being the accounts of the civil service systems of Great Britain and the United States. It makes an excellent book of reference for those who are interested in or concerned with the problem of selecting the personnel of administration.

CLINTON ROGERS WOODRUFF
Philadelphia

HART, JAMES. *Tenure of Office under the Constitution: A Study in Law and Public Policy*. Pp. x, 384. Baltimore: Johns Hopkins Press, 1930. \$3.50.

This book is a learned constitutional discussion of a matter of the utmost practical importance. The opinion of the Supreme Court of the United States in the case of *Myers v. U. S.* suggested that the President has power to remove at his discretion almost all officers of the United States whether or not he appoints them, and even if they have been appointed for a definite term of years. In other words, if the suggestion is followed, the President's control over the administration of the United States is to be not only personal but arbitrary.

There is unquestionably a strong tendency towards autocracy in government in the United States today, partly in answer to popular demands that some visible person should be held responsible for Government action, and partly by imitation of private businesses. Professor Hart points out the evils of presidential autocracy, particularly

in view of the fact that the competent conduct of public business requires an increased use of boards and commissions intended by Congress to be at least semi-independent. He presents an excellent argument for making tenure of office under the Constitution more secure.

E. P. CHASE

Lafayette College

STEPHENSON, NATHANIEL WRIGHT. *Nelson W. Aldrich: A Leader in American Politics*. Pp. xii, 495. New York: Charles Scribner's Sons, 1930. \$5.00.

We have here a notable biography. It has accomplished wonders in the way of revealing one of the most enigmatic figures in our recent history, and falls short of a place among great psychographic essays—to use a word coined by Gamaliel Bradford—only because any significant penetration of the inner Aldrich is wholly impossible.

Aldrich is one of these men to whom the baring of his mind, however fleetingly, to outside view is a degrading sort of unchastity. He has built about himself an unconquerable reserve; and although Dr. Stephenson has had access to all available material, including much previously untapped, and has delved tirelessly through it, he has not been able to dig down to the core of the man, simply because it was not there. Aldrich remains the same riddle to us, even after this intimate biography, that he was to his contemporaries—a talented statesman, a great leader, a good friend, but a cloistral and mysterious figure to the end.

Within the limits imposed by this basic secretiveness, Dr. Stephenson has done a praiseworthy job. He has looked with dispassionate fairness on a period near enough at hand to make such a viewpoint highly difficult. He has threaded the complicated mazes of Aldrich's political dealings, with industry and ingenuity. The McKinley and Roosevelt administrations have no saner historian nor more judicial critic.

The style is much more than adequate. Dr. Stephenson knows and appreciates fine writing. He describes Senator Spooner as follows: "He lived in that delightful world a little different from the real world, a little more abstract than life can ever be, which

is the fairy palace of the deductive genius of the law." I am sure that as he wrote this sentence, a warm glow of accomplishment filled his mind, a sense of having achieved the exact nuance of a thought infinitely difficult to express. And for one reader at least, that glow is justified.

ALPHONSE B. MILLER

Philadelphia

ADAMS, RANDOLPH G. (Ed.). *Selected Political Essays of James Wilson*. Pp. 356. New York: Alfred A. Knopf, 1930.

This is a well-chosen selection from the political writings of one of the most vigorous and acute thinkers of the Revolutionary and early national period of our history. James Wilson began his public career in the colonies in the year of the Stamp Act Congress and continued it in an atmosphere which he, at least, found congenial to constructive thinking. In a day when political scientists are engaged with a bee-like industry in seeking out and piling up facts, it is refreshing to turn to a writer who thought about what he had learned. Students of political theory and international organization will find much that seems modern anticipated by Wilson in his essays on the Nature and Extent of the Legislative Authority of the British Parliament, in his Defense of the Federal Constitution, and in his lectures on the General Principles of Law and Obligation, and Of Man as a Member of the Great Commonwealth of Nations. Mr. Adams has added to the value of the book by contributing a sprightly and enthusiastic introduction of some forty pages. There is also a descriptive Bibliography of works of and relating to James Wilson.

LANE W. LANCASTER

University of Nebraska

KILPATRICK, WYLIE. *Problems in Contemporary County Government*. Pp. xxi, 666. University, Va.: Institute for Research in the Social Sciences, 1930.

This volume, the eighth in the series published by the University of Virginia's Institute for Research in the Social Sciences, is a comprehensive survey of most aspects of Virginia county government. A few county functions are purposely omitted

because they have been separately treated in other recent monographs, but the remaining functions are treated at great length.

Each chapter, from county engineering to county executives, begins with a general statement of the problem and the method of approach, and ends with a series of suggestions for improvement. The intervening pages are filled with detailed descriptions of procedure, individual counties frequently being singled out for consideration. Occasional reference is made to the experience of counties in other states, but only for purposes of comparison.

Within the covers of this volume Professor Kilpatrick presents a very complete picture—the legal basis of county activities, the actual administrative relationships, and the deviations from standard practice. This study should prove invaluable for those who come in daily contact with the problems of rural local government in Virginia. For general students of government its usefulness is perhaps somewhat impaired by the vast quantity of detail which fills its pages.

AUSTIN F. MACDONALD

University of California

PARK, NO YUNG. *Making a New China*. Pp. vii, 308. Boston: The Stratford Company, 1929. \$2.50.

China, the "mystery," has changed for the average thinking man of America into China, the "puzzle." Kaleidoscopic changes during the last two decades have left the citizen in a state of confusion as to what was happening and why. No other recent book presents such a clear exposition of these events as does that of No Yung Park's *Making a New China*.

With an unusual mastery of straightforward English, and without partiality, he analyzes and describes the recent movements that have established the present Government of China. Here one will find not only an account of these political conflicts oriented to the fundamental aspects of Chinese culture, particularly familist organization and ideals, but also other social movements and problems, such as the literary renaissance, the industrial revolution, the struggle against Bolshevism, the labor movement, marriage and morals,

population problems, the present status of the opium problem, and the efforts to free China from imperialistic controls, chiefly of England and Japan.

One reads with a sense of shame what Nordic snobbery has done to China, yet with satisfaction because of the manifest fairness with which Mr. Park presents these conditions and gives due credit where it belongs.

DANIEL H. KULP II

Teachers College,

Columbia University

BUTLER, NICHOLAS MURRAY. *The Path to Peace*. Pp. xiii, 320. New York: Charles Scribner's Sons, 1930. \$2.50.

In this book the President of Columbia University makes a notable contribution to the preservation of peace, through the publication of a number of essays and addresses on peace and its making. Each article has already reached a large audience through the spoken or the printed word, or both, in Europe and America. Twenty-two essays cover a wide range of subjects, such as the preservation of peace, the League of Nations, the international mind, America's relations with France, the Locarno pacts, the renunciation of war, and the state as a moral person. Some of the essays relate to principles and some to institutions, and all deal with the newly ordered society in which we live today.

The striking thing about these essays is their living, vital message today. Dr. Butler has written and spoken, not of the past and the future, but of pressing international situations demanding solution. In each case the author has stated the problem and has suggested what should be done about it. Thus the considered principles of international conduct may take definite form, either through the action of foreign offices, through international agreements, or through the establishment and the maintenance of international institutions. Of special significance are the addresses on "Imponderables," delivered before the German Reichstag, and on "Nation-Building and Beyond," the Richard Cobden lecture delivered at the Royal Society of Arts, in London.

CHARLES E. MARTIN

University of Washington

CARMAN, HARRY J. *Social and Economic History of the United States*, Vol. I. Pp. xii, 616. New York: D. C. Heath & Company, 1930.

This volume, covering the period from 1500 to 1820, is a welcome addition to the general treatises on American economic history. In his introductory chapter Professor Carman briefly discusses the forces responsible for the extension of European civilization to the new world—a background indispensable to an intelligent appreciation of the significance of the great colonizing movement set in motion after the discovery of the Americas.

In his treatment of the colonial period the author vividly reconstructs the life of the colonists and evaluates the cultural changes which manifested themselves in the early years of settlement. His observations on the various elements found in the colonial population, including an excellent discussion of the non-English-speaking settlers, on the extent of education, on literature, on journalism, and on the arts, are skillfully woven into the general narrative of economic growth. The chapters describing the struggle for economic independence and possession of the West, frontier problems, and western ideals and culture are a distinctive contribution to the synthesis of American history.

The text is illustrated with numerous reproductions of pages from historic documents and photographs of men who helped to pattern European civilization on American soil, also with excellent maps and charts.

FELIX FLÜGEL

University of California

COLE, HARRY ELLSWORTH. *Stagecoach and Tavern Tales of the Old Northwest*. Pp. 376. Cleveland: The Arthur H. Clark Company, 1930. \$6.00.

The title is definitive as referring to pioneer stories in that portion of the country surrounding the upper waters of the Mississippi and known as the Old Northwest. Mr. Cole, the author, was for years President of the State Historical Society of Wisconsin. In his profession of journalist he had learned the value of human interest materials in recording any story.

This accounts for the attractiveness of his style. But he also had respect for his two hobbies—history and archeology—which accounts for the special double-page map, the thirty good illustrations, and the elaborate Index.

Any one at all familiar with the eventful history of the Old Northwest will find in this greatest work by Mr. Cole a wealth of interesting and illustrative records not found in the more standardized books.

At the time of the author's death his manuscript was nearly ready for the printers. The necessary last revision was done by Louise Phelps Kellogg, Senior Research Associate of the State Historical Society of Wisconsin. That one of her reputation would render this service is another evidence that *Stagecoach and Tavern Tales of the Old Northwest* deserves the favorable attention of collectors and readers of Americana.

EDMOND S. MEANY

University of Washington

SMITH, PRESERVED. *A History of Modern Culture*; Vol. I, *The Great Renewal, 1543-1687*. Pp. xi, 672. New York: Henry Holt and Company, 1930. \$5.00.

This is the first of four volumes to be devoted to a cultural history of the last four centuries. Adopting Bacon's phrase "The Great Renewal" for this first volume, covering the period from Copernicus to Newton, Professor Smith indicates that the foundations of the modern mind must be sought in the growth of the physical sciences and the development of scientific method.

The author's attention, however, is not confined to a history of science, his chief interest lying in the reaction of the new knowledge on the entire intellectual life of Europe. Nor does he, like some earlier writers, confine his attention to the attitude of theologians toward the new sciences; for he points out that this is only one example, though a striking one, of the opposition of mankind in general to all fundamental changes. "What men prize more than anything else, what they fight for as for their lives, are their mental habits, be they religious or rational. The young can be educated in different habits; the old are

condemned, or privileged, to die in their inveterate beliefs."

The extent of the field surveyed in this volume is indicated by the organization of the material. Part I, The Sciences—Astronomy, Physics, Mathematics, Geography, Biology, Anatomy, The Scientific Revolution; Part II, the Humanities—Philosophy, Political Theory, Historiography, Biblical and Classical Scholarship; Part III, Social Control—Education, Religion, Free Thought, Superstition, Persecution and Tolerance, Laws; Part IV, The Spirit of the Times—Morals and Manners, Literature, Art. In all these fields Professor Smith has gone deeply into the literature of the period as well as into that of modern times, as may be seen from his Bibliography, which occupies some forty-five pages.

We have in this book by far the best example of cultural history that has yet appeared. Its analysis of the various tendencies of the age and their relation to each other shows understanding and keen psychological insight. Nowhere, for example, will there be found in brief space a better explanation of the relation of Calvinism to capitalism and industry than on pages 375-378; nor would it be easy to point to a juster estimate of the strength and the weakness of Puritanism. It is suggested that a fuller understanding of its spirit might modify the modern misconception that the Puritan was hostile to the adventures and excitement of life. "That the Puritans lived a drab and unexciting life is a fable invented by their satirists. Their interests were so much vaster than those of the gentlemen about town that they escaped the notice of the latter altogether. King-baiting is a more exciting sport than bear-baiting; a civil war is the most absorbing of dramas; and subduing a savage continent a more thrilling adventure than the most unrestrained dance."

An account of the "blue laws" and the sumptuary legislation on the Continent in the sixteenth and seventeenth centuries should convince the critic that such enactments were as common in Lutheran and Catholic as in Calvinistic lands, thus placing in proper perspective what are often thought of as the offensive peculiarities of

an isolated community like New England.

Such observations on the various aspects of the period indicate the breadth of the author's interpretation and suggest a certain dry humor that often illuminates the subject far better than labored exposition.

A. C. HOWLAND

University of Pennsylvania

COOLEY, CHARLES HORTON. *Sociological Theory and Social Research*. (Being selected papers—with an introduction and notes by Robert Cooley Angell.) Pp. xiv, 345. New York: Henry Holt and Company, 1930. \$3.00.

The importance of Professor Cooley's writings to American sociologists is so great that his literary executors need offer no excuses for the reissue in convenient form of this collection of his scattered publications. The selection of papers to be included in this volume was based on a memorandum left by the author at his death, designating those of his previously published writings which he was willing to have collected in this way.

One hesitates to select any of these papers for special mention, when all are so abundantly worth while. One hundred pages out of a total of three hundred and thirty-six are occupied by "The Theory of Transportation," which was Cooley's Ph.D. thesis, and which, though written in 1893, can still be accepted as a penetrating study in human ecology. Probably the most important of the other papers in the volume are "Personal Competition" and "The Roots of Social Knowledge." There is an interesting brief account of the development of sociology at the University of Michigan, and a complete Bibliography of Professor Cooley's published writings.

FLOYD N. HOUSE

University of Virginia

WISSLER, CLARK. *An Introduction to Social Anthropology*. Pp. x, 392. New York: Henry Holt and Company, 1929. \$3.50.

The student of the social sciences who desires a convenient survey of anthropological knowledge will find this book interesting and profitable reading. In default of direct observation of a primitive community,

which is the only way to real understanding, the author suggests study of some of the more accessible descriptions based upon field work.

After a chapter on the biological group in which account is taken of the findings of physical anthropology, the author proceeds to a consideration of social anthropology. There are chapters on the economic base, the study of languages, and the archeological problem. The social structure and social organization of communities are described in chapters on the tribe, dual division and exogamy, relationship systems, marriage, and totemism. The thought life is discussed in chapters on animism, magic, mythology, and basic beliefs and rituals. There follow chapters on technology, the geographic point of view, and the geographic method.

With these divisions of the subject outlined, it is possible to introduce the reader to some of the more abstract concepts of social anthropology. Here, interpretation is introduced and anthropology advances beyond mere description and helps us to understand the trend of social change by giving "historical or sequential perspective." The chapters on the culture area concept and on culture processes serve to tie together the discrete facts into a dynamic and functional whole and leave the reader with the desire to pursue this fascinating subject farther. A brief list of references and questions is appended for further study and reading. There is a good Index.

F. STUART CHAPIN

University of Minnesota

TAYLOR, GRAHAM. *Pioneering on Social Frontiers*. Pp. xii, 457. Chicago: University of Chicago Press, 1930. \$4.00.

Pioneering on Social Frontiers, by Graham Taylor, founder of Chicago Commons, is not only the story of a man who through a lifetime has waged, with high faith, a battle for human justice, but is also an absorbing story of a city's growth and of the development of its human consciousness.

Graham Taylor has been a leader in stirring events and he brings a rare interpretative quality to bear upon life and people. After a boyhood in Philadelphia and early manhood in New England, he

arrived in Chicago at the time of the World's Fair. We follow with him the city's struggles for good citizenship through political jungles—a fight against vice and political corruption, told with many a picturesque detail.

The finest quality of understanding is brought to bear on the industrial conflict and we see at close hand the beginnings of social work and the personalities which have played a dominant part. We feel as our own the problems of the immigrant neighbors surrounding the Commons, and the efforts of the settlement residents to offer a common ground for understanding among all sorts and conditions of men.

It is essentially a story of high adventure of the spirit, both for the writer himself and for those of whom he tells, and when we finish the book we can but feel that Graham Taylor's students and fellow residents were rarely privileged to have had his leadership. He richly gave himself to the needs of his community and played a courageous part in the molding of his own times.

HELEN HALL

University House
Philadelphia

BOGEN, BORIS D. *Born a Jew*. Pp. 360. New York: The Macmillan Company, 1930. \$3.00.

Dr. Bogen's sudden and untimely death doubtlessly accounts for the presentation of this volume in a form different from that in which it would have been seen had he been permitted to complete the manuscript himself.

It represents the adjustment of a highly intelligent immigrant to American life after overcoming initial handicaps of transfer from one cultural environment to another without knowledge of the language or customs of his new country or any adequate preparation for its industrial or social life. Coupled with this is a personal and somewhat superficial survey of the administration of relief funds provided by American Jews for their co-religionists suffering from the effects of the war in Russia, Poland, and other countries of Southeastern Europe.

The result is a somewhat disproportionate amount of space allotted to two phases of Dr. Bogen's life, and a somewhat inade-

quate portrayal of the very important part that he played in the development of social work among Jews in America and the large contribution that he made toward a better understanding between the older and the newer Jewish groups in America; the older settlement being chiefly of German and West European origin, and the newer groups, numerically so much larger, having an East European background.

This was his peculiar function and it is to be regretted that he was not permitted to present his work in such a way as fully to explore his phase.

SOLOMON LOWENSTEIN

New York

CARDAN, JEROME. (Translated by Jean Stoner.) *The Book of My Life*. Pp. xviii, 331. New York: E. P. Dutton and Company, 1930. \$3.50.

Though Olschki has lately spoken in dissent, most mathematicians and historians of science regard Cardan's *Ars Magna* as the beginning of modern algebra and as one of the great books of the sixteenth century. Apart from this achievement, the author was one of the most prolific writers and one of the most interesting adventurers of his age. Though the reader who expects to find in his autobiography the charm which has long made his contemporary Cellini famous will be disappointed, he will find in it an abundance of curious matter. Like Abelard's apology, it is really a *historia calamitatum*; for, what impressed Cardan chiefly in his garrulous old age was the number of misfortunes which had befallen him. Ill luck, poverty, calumny, diseases, impotence, and unhappy domestic relations combined to make his life a vale of tears.

Scientist though he was, accomplished physician and renowned mathematician, Cardan lived in a thick atmosphere of superstition. Apart from his pet pursuit of astrology, he saw in every accident of life a supernatural cause. Special providences and diabolic interferences with the world were inventions of the Puritans. Dreams, too, figure largely in his account, some of them crying for psychoanalytic interpretation and almost getting it from himself. Little room is left for his scientific interests

and for his contacts with the great ones of the world, but this little is precious. The translation is excellent, and the notes learned. One of the few infelicities is the word "pyrotechnics" (p. 190) where the context shows that "firearms" rather than "fireworks" is meant.

PRESERVED SMITH

Cornell University

LAFFAN, R. G. D. *Select Documents of European History 800-1492*. Pp. xv, 205. New York: Henry Holt & Company, 1930. \$1.75.

This is a collection of source material for the use of college classes. The extracts are arranged under eight heads: Dark Ages, Hildebrandine Reform, Crusades, Papacy and Empire in the Twelfth Century, The Church in the Thirteenth Century, The Empire and its Neighbors, 1200-1370, France in the Fourteenth and Fifteenth Centuries, the Church in the Fourteenth and Fifteenth Centuries.

Much of the material is to be found in other source books, and Henderson's *Historical Documents* have been drawn upon to a considerable extent. The extracts are mostly formal documents and deal with political and church history to the exclusion of other aspects of the medieval period. In this respect it is inferior to such collections as Robinson's *Readings in European History*; but within its limits the selections have been wisely chosen and translated with clearness and accuracy.

A. C. HOWLAND

University of Pennsylvania

WALLACE, BENJAMIN BRUCE, and EDMISTER, LYNN RAMSAY. *International Control of Raw Materials*. Pp. 479. Washington: The Brookings Institute, 1930. \$3.50.

The neo-mercantilistic practices of the modern nationalistic state, with their restrictions upon the free movement of commerce, seem to fit into the modern scheme of technology and industry "like dust in the eyes and sand in the bearings" (to borrow from Veblen a phrase used in another connection). In view of this fact, this recent study of the Institute of Economics, which points toward the removal of

some of the obstacles to international commerce and at the same time to international good will, will be welcomed by all serious students of international relations. The reviewer fears, however, that some of them, at any rate, will be disappointed.

Despite the rather general title which has been given this study, it is concerned primarily with control of those raw materials which are not produced in the United States (or are produced in amounts inadequate to supply domestic consumption) and at the same time have been subjected to export restrictions by the country from which a significant portion of the world output happens to come. Among the experiments in control studied are the Chilean control of nitrate, the Japanese camphor monopoly, the Franco-German potash combine, the Brazilian valorization and control of coffee, the British export restrictions on rubber, and the Canadian embargoes on pulp wood.

In view of the detailed and intensive character of the analyses to which the specific industries have been subjected, no one reviewer is likely to be qualified to evaluate critically each of the separate studies. Let us therefore confine our attention primarily to the authors' discussion of the Franco-German potash monopoly. After a brief presentation of the major facts in the evolution of government control of the German potash industry and a description of the present agreement between the French and German potash industries covering price and output, the authors proceed to an analysis of the economic consequences of government control. They conclude that for many years consumers were heavily burdened by the inefficient organization of the potash industry; that prior to the war the prices charged American consumers by the German syndicate contained a large element of monopoly profit; that discrimination was long practiced against the foreign purchaser of potash; that for several years after the war, profits per unit of potash sold appear to have been fairly small; that the postwar rationalization program has resulted in great improvement in the organization and efficiency of the industry; that price discrimination against foreigners has been

greatly lessened if not entirely eliminated; that within recent years the margin of profit appears to have increased; and that present profits in the German industry are of a quasi-monopoly character. To these major conclusions the reviewer takes no exception. Unfortunately, however, numerous errors have crept in—errors apparently resulting primarily from an undue reliance upon secondary American rather than original foreign sources. The force of the analysis has thereby been somewhat weakened. Lack of space makes impossible a complete bill of particulars; a single illustration must therefore suffice. The authors are in error in their assumption that under the syndicate of 1910 and under the present syndicate (see pages 83 and 103) profits are pooled and distributed among the members of the syndicate on a basis of the quotas allotted to them. On the contrary, throughout the entire existence of the syndicate, the individual members have retained their profit-earning identity. The syndicate has functioned primarily as a price-controlling and sales agency. Although production quotas are allotted to each of the syndicate members and selling prices are uniform, individual members have always reaped whatever profits more efficient organization, better management, improved processes, or superior deposits may have yielded. The authors' error in this regard can scarcely have any other effect than to create an undesirable and no doubt unintended prejudice against the syndicate and the functions which it has performed.

As previously stated, such errors do not invalidate the conclusions which the authors reach, although they do invalidate some of their arguments; moreover, errors of this type afford a point of attack on the whole study by foreign critics, who are likely to regard it as having been actuated primarily by the American need of foreign raw materials. The possibility of cordial reception of the study by those nationals within whose boundaries the industries analyzed happen to fall would have been enhanced, the reviewer believes, had more space been allotted to a study of controls of a somewhat similar character set up by American industries, and had the conse-

quences of such controls been subjected to a more searching analysis. For example, the authors are content with a two-and-one-half page treatment of the activities of Copper Exporters, Inc., and refuse to pass judgment upon the merits of the contention that the operations of this organization were a factor in the rise in the prices of copper. This omission is likely to be regarded as serious by the leaders of the German potash syndicate, who in the spring of 1929 invited the attention of the reviewer to the "moderate" price policy pursued by the potash syndicate in comparison with the "less-restrained" policy pursued by American business men alleged to dominate the copper price situation. In truth, it may completely undermine confidence on the part of those whose industries were subjected to searching study, the findings of which (objective though they may be) are by their very nature calculated to condemn the particular type of control under which the industry has operated.

Despite these shortcomings, which in the reviewer's opinion are serious, *International Control of Raw Materials* is a study of value. Its conclusion with regard to the inadequacy of relief through national action from the irritation and the economic hardship which nationalistic control has worked in the past, and its suggestion for an international conference for the formulation of basic principles for the control of raw materials of commerce, would seem undoubtedly to point in the right direction.

GEORGE WARD STOCKING

University of Texas

DUBLIN, LOUIS I., and LOTKA, ALFRED J. *The Money Value of a Man*. Pp. xv, 264. New York: The Ronald Press Company, 1930. \$5.00.

Here at last is a volume which presents a reliable method for computing, from his earnings, age, and so forth, the dollars-and-cents value of a man to his dependents at a given time, and also the extent to which that value is diminished by injury or disease.

The aim of the book is essentially practical from first to last. By the aid of over eighty tables which can be read at a glance, it is possible to calculate the net money

value of men at various ages and in a wide range of circumstances. These tables cover the cases of persons with maximum earnings from \$1,000 to \$10,000 per annum; not only those of normal mortality, but also three grades of excess mortality, such as occurs among persons who fall below the norm through some inborn or acquired incapacity to fulfill the ordinary tasks of life. These three groups are handicapped as wage earners by various physical or mental impairments. These various tables are worked out in detail, and constitute about one half of the book.

The other half of the volume gives a historical retrospect of previous attempts to set a price on a human individual; the cost of bringing up a child to adolescence; and applications of the concept of human life value to public health and to life insurance. As the authors point out, equating human life to a sum of money is of value to "health officers and other workers in social fields who at times welcome evidence of the costliness of disease and premature death," and also to life insurance agents in helping them to determine how much insurance a family man should carry if he is adequately to protect his family.

It was obviously impossible for the authors to answer all the questions that arise in connection with the problem of how much and what type of life insurance the average man should carry. They have, however, covered the more important ones that usually come up for discussion, and in doing so, have laid many under a debt of gratitude to them for having performed a worth-while task thoroughly and well.

FRANK D. WATSON

Haverford College

GEMMILL, PAUL F. *Fundamentals of Economics*. Pp. xii, 489. New York: Harper & Brothers, 1930. \$3.00.

Fundamentals of Economics is appropriately named, for it is really designed to provide fundamentals rather than to elaborate a great variety of applied subjects. The central problem of value is given nearly one fifth of the book, and distribution almost another fifth, while the problems of marketing, agriculture, labor organization, single tax, socialism, and some other problems

often treated in elementary texts, are either treated briefly and incidentally or not at all. The book is clearly designed for students who are going to take further work in economics and who need the foundation work, and it is doubtless better suited to such students than to those who expect to take only one course in economics. More than most texts, it is a book on economic theory.

In his discussion of value the author follows generally the supply-and-demand theory of Marshall; in fact he makes more use of Marshall than almost any other American text book writer. Yet, in certain connections, the author makes more use of marginal costs, marginal producers, and marginal concepts generally, than Marshall would approve. For instance, he states: "There is a tendency for producers to regulate supply in such a manner that price in the moderately long run approximates the average costs of production of the marginal producer." It is difficult to imagine Marshall writing that. Similarly, in the discussion of wages, he states: "It is evident, then, that the quantity of labor affects greatly the wage that each unit can command, since labor's marginal product depends largely upon the quantity of labor that is available for use, if the quantities of other agents of production remain unchanged." In other words, the quantity of labor affects the wage greatly *because* it affects the marginal product. There is more than a suggestion of a marginal productivity theory of wages here, and, of course, Marshall did not give that theory any rating at all. It is true that Professor Gemmill finally comes to the supply-and-demand theory of wages, but he gives more attention to marginal productivity than seems consistent with that theory.

Altogether, the book will doubtless rank high. It is brief, almost sketchy it seems in places, but is full of meat, and the illustrative data are pertinent and up to the minute. And, since the author has confined himself largely to the field of economic theory, he is able to cover his ground as well as do some authors of much larger books.

A few special features of the book deserve mention. There is a brief summary

at the end of most of the chapters, and an excellent list of references at the end of the book. The Index is unusually serviceable, and the bookmaking is good.

JOHN ISE

University of Kansas

SCHABACKER, R. W. *Stock Market Theory and Practice*. Pp. xxix, 875. New York: B. C. Forbes Pub. Co., 1930. \$7.50.

The author of this book holds the position of Financial Editor of *Forbes Magazine*. In this capacity it has been his task for many years to hear and record the stories of fortunes won and lost in Wall Street. It is from this background that he attempts to include under one cover the principles of organization and operation of this wealth-shifting process, bringing to his task an extensive knowledge of the details and the popular theories forming the stock in trade of the professional and semi-professional speculator. These details are related in the intimate and easy style of a journalist.

The subject matter is divided into two parts, the first dealing "with mechanics or tools" and the second "with practical trading theories." The book's chief merit perhaps lies in this combination. There are already treatises to be had which cover the first of these two fields quite thoroughly; such as Meeker, J. E., *The Work of the Stock Exchange*; and Huebner, S. S., *The Stock Market*. Furthermore, they approach the subject from a somewhat broader viewpoint. There are also books such as Caret, P. L., *The Art of Speculation*, and Van Strum, K. S., *Forecasting Stock Market Trends*, and a long list of others, which enlarge in great detail upon the various plans of short-run trading, the second part of *Stock Market Theory and Practice*. In this volume is to be found a two-in-one survey of the entire field. An Appendix of 125 pages is included.

Despite its size, this book is not sufficiently broad in its approach to be classed as a comprehensive survey of the subject. The place the stock market occupies in the marketing of securities and its function in the field of risk and insurance are not adequately considered. In particular, no references whatever to the highly important

legal phases of the subject are to be found. This is a serious omission in the present period of financial uncertainty, even to the man who desires only a "practical" treatise.

G. WRIGHT HOFFMAN

University of Pennsylvania

HOWARD, STANLEY EDWIN. *The A.B.C. of Accounting*. Pp. xv, 302. Princeton: Princeton University Press, 1929. \$3.00.

This book, as stated in the preface, is intended to meet the needs of those who desire a general knowledge of accounting procedure without going too deeply into the technical end of the subject. In the writer's belief there is a large field for such a book, which prior to this time has not been adequately covered.

The method followed by Mr. Howard of illustrating the subject matter with numerous exhibits makes it more easily possible for those without an extensive accounting background to acquire a very good idea of general accounting principles.

The book necessarily deals very briefly with the subject of cost accounting, and the writer has not attempted to deal with modern development of standard costs, expense of idle plant, and the accounting involved in budgetary control.

It seems a little disappointing that these subjects so vital to modern industrial accounting could not have been briefly dealt with.

With the exercises in the back, the book becomes to all intents and purposes a short course in fundamental accounting which should prove very useful to those wishing to obtain a groundwork of knowledge in this important subject.

WILLIAM H. ALDEN, JR.

Philadelphia

WU, SHAO-TSENG. *Railroad Valuation and Fair Return*. Pp. xxiv, 233. Philadelphia: University of Pennsylvania Press, 1930. \$3.00.

This exceptionally good doctoral dissertation contains a lucid analysis of the subject which, by reason of legislative enactment and judicial decision, has become the heart of the problem of regulating railroads and other public utilities in the United States.

Dr. Wu presents a succinct but adequate

review of the current theories of railroad valuation, with critical comment, and adds a helpful discussion of the closely related problems of fair return, recapture of excess earnings, and consolidation. The study is quite obviously the product of a vast amount of earnest and patient research; it is marked by a restraint of tone which benefits the impartial discussion of a highly controversial topic; and it reflects, in its thoughtful criticisms, the instinct and insight of a keen and capable scholar.

T. W. VAN METRE

Columbia University

BOOKS RECEIVED

ANDERSON, GEORGE. *Fixation of Wages in Australia*. Pp. 568. Melbourne: Macmillan and Company in association with Melbourne University Press, 1929. 21s.

Annual Report of the Board of Regents of The Smithsonian Institute. Pp. xiii, 622. Washington: U. S. Government Printing Office, 1930. \$1.75.

BÁEZ, CECILIO. *Curso de Derecho Internacional Privado Americano*. Pp. 157. Asuncion, Paraguay: Imprenta Nacional, 1926.

BAUER, JOHN. *Standards for Modern Public Utility Franchises*. Pp. 36. New York: Municipal Administration Service, 1930. 25 cents.

BEARD, CHARLES A., and BEARD, WILLIAM. *The American Leviathan: The Republic in the Machine Age*. Pp. xv, 824. New York: The Macmillan Company, 1930.

BEASLEY, F. R. *Open Market versus Pooling in Australia*. Pp. 59. Sydney, Australia: Cornstalk Publishing Co., 1928. 50 cents.

BERMAN, EDWARD. *Labor and the Sherman Act*. Pp. xviii, 332. New York: Harper & Brothers, 1930. \$3.00.

BEST, HARRY. *Crime and the Criminal Law in the United States*. Pp. xvii, 615. New York: The Macmillan Company, 1930. \$6.50.

BJORLAND, EINAR, and PALMER, JAMES L. *A Study of the Prices of Chain and Independent Grocers in Chicago*. Pp. viii, 55. Chicago: University of Chicago Press, 1930. \$1.00.

- BLAND, F. A. *Shadows and Realities of Government*. Pp. x, 316. Sydney, Australia: Workers' Education Association of New South Wales, 1923.
- BOGART, ERNEST LUDLOW. *Economic History of the American People*. Pp. xii, 797. New York: Longmans, Green and Company, 1930. \$3.50.
- BOND, MARJORIE N., and BOND, RICHMOND P. *Adventures in Reading, Third Series, Current Books, 1929-1930*. Pp. 48. Chapel Hill: University of North Carolina Press, 1930. 50 cents.
- BRIGDEN, J. B., COPLAND, D. B., *et al.* *The Australian Tariff, An Economic Inquiry*. Melbourne: Melbourne University Press in association with Macmillan and Company, 1929. 3/6.
- BROWN, EDWARD F., DENNIS, E. B., JR., HENRY, JEAN, and PENDRAY, G. EDWARD (Eds.). *City Noise*. Pp. xii, 308. New York: Noise Abatement Commission, 1930.
- BUTLER, HUGH. *The United Kingdom*. Pp. xxii, 953. Washington: U. S. Government Printing Office, 1930. \$1.75.
- CAMPBELL, PERSIA, MILLS, R. C., and PORTUS, G. V. (Eds.). (Issued by the Institute of Pacific Relations, New South Wales Branch.) *Studies in Australian Affairs*. Pp. 269. Melbourne: Macmillan and Company in association with Melbourne University Press, 1928. 6s.
- CARPENTER, JESSE T. *The South as a Conscious Minority*. Pp. x, 315. New York: New York University Press, 1930. \$4.50.
- CARROLL, MOLLIE RAY. *Unemployment Insurance in Germany*. Revised. Pp. 135. Washington: The Brookings Institution, 1930. \$3.50.
- CHURCHILL, WINSTON S. *A Roving Commission: My Early Life*. Pp. xii, 377. New York: Charles Scribner's Sons, 1930. \$3.50.
- COPLAND, D. B. *Credit and Currency Control, with Special Reference to Australia*. Pp. 145. Melbourne: Melbourne University Press in association with Macmillan and Company, 1930. 5s/6.
- CRANDALL, ANDREW WALLACE. *The Early History of the Republican Party 1854-1856*. Pp. 313. Boston: Richard G. Badger, 1930.
- DAVIDSON, A. C. *Central Reserve Banking*. Pp. 35. Sydney, Australia: Angus & Robertson, Ltd., 1929. 50 cents.
- DJUVARA, TRANDAFIR G. *Mes Missions Diplomatiques*. Pp. iv, 179. Paris: Librairie Felix Alcan, 1930. 25 francs.
- EMMET, BORIS. *Department Stores*. Pp. xxiii, 214. Stanford University: Stanford University Press, 1930. \$4.00.
- EZEKIEL, MORDECAI. *Methods of Correlation Analysis*. Pp. xiv, 427. New York: John Wiley & Sons, Inc., 1930.
- FAIRMAN, CHARLES. *The Law of Martial Rule*. Pp. viii, 263. Chicago: Callaghan and Company, 1930.
- FORREST, EARLE R. *Missions and Pueblos of the Old Southwest*. Pp. 386. Cleveland: The Arthur H. Clark Company, 1929. \$6.00.
- Forty-fifth Annual Report of the Bureau of American Ethnology 1927-1928*. Pp. vii, 857. Washington: U. S. Government Printing Office, 1930. \$2.35.
- Forty-sixth Annual Report of the Bureau of American Ethnology 1928-1929*. Pp. vii, 654. Washington: U. S. Government Printing Office, 1930. \$1.90.
- GIFFORD, EDWARD W., and BLOCK, GWENDOLINE HARRIS (Compilers). *Californian Indian Nights Entertainments*. Pp. 323. Glendale: The Arthur H. Clark Company, 1930. \$6.00.
- GOROVITSEFF, A. *Les Revolutions*. Pp. xvi, 222. Paris: Librairie Felix Alcan, 1930. 15 francs.
- Government (The) of Metropolitan Areas*. Pp. 403. New York: National Municipal League, 1930. \$3.50.
- GRINKO, G. T. *The Five-Year Plan of the Soviet Union*. Pp. 340. New York: International Publishers, 1930. \$3.50.
- HABER, WILLIAM. *Industrial Relations in the Building Industry*. Pp. xviii, 592. Cambridge: Harvard University Press, 1930. \$5.00.
- HALL, FRED S. (Ed.), and ELLIS, MABEL B. (Assistant Ed.). *Social Work Year Book—1929*. Pp. 600. New York: Russell Sage Foundation, 1930. \$4.00.
- HEWES, AMY. *The Contribution of Economics to Social Work*. Pp. ix, 135. New York: Columbia University Press, 1930. \$2.00.
- HIGGINS, HENRY BOURNES. *A New Prov-*

- ince for Law and Order.* Pp. vii, 181. London: Constable and Company, Ltd., 1922.
- HOBSON, J. A. *Rationalisation and Unemployment: An Economic Dilemma.* Pp. 126. New York: The Macmillan Company, 1930. \$1.75.
- HODGES, C. F. *Wall Street: A Practical Text on the Work of all Departments of a Brokerage House.* Pp. 512. New York: Wall Street Business School, 1930. \$6.00.
- HUBBARD, HENRY V., MCCLINTOCK, MILLER, and WILLIAMS, FRANK B. *Airports.* Pp. xvi, 190. Cambridge: Harvard University Press, 1930. \$3.50.
- HULL, ROBERT SEDGWICK. *Casualty Insurance Accounting.* Pp. xii, 325. New York: The Ronald Press Company, 1930. \$10.00.
- JOSE, ARTHUR WILBERFORCE, CARTER, HERBERT JAMES, and TUCKER, T. G. (Eds.). *The Australian Encyclopædia*, Vol. 1, pp. xi, 772. Vol. 2, pp. 748. Sydney, Australia: Angus & Robertson, Ltd., 1926. Vols. 1 and 2, \$25.00.
- JOSE, ARTHUR W. *History of Australia, From the Earliest Times to the Present Day.* Pp. xiii, 365. Sydney, Australia: Angus & Robertson, Ltd., 1930. \$1.20.
- KAHLER, CLYDE M. *Business Interruption Insurance.* Pp. 244. Philadelphia: 1930.
- KUCZYNSKI, ROBERT R. *Birth Registration and Birth Statistics in Canada.* Pp. xii, 219. Washington: The Brookings Institution, 1930. \$3.00.
- LASKI, HAROLD J. *The Dangers of Obedience and Other Essays.* Pp. 293. New York: Harper & Brothers, 1930. \$3.00.
- LASSWELL, HAROLD D. *Psychopathology and Politics.* Pp. ix, 285. Chicago: University of Chicago Press, 1930. \$3.00.
- LEACOCK, STEPHEN. *Economic Prosperity in the British Empire.* Pp. vii, 246. London: Constable and Company, Ltd., 1930. 7/6.
- League of Nations: *Ten Years of World Coöperation Geneva.* Pp. xi, 467. Boston: World Peace Foundation, 1930. \$3.50.
- LIES, EUGENE T. (Dir.). *The Leisure of a People.* Report of a Recreation Survey of Indianapolis, Under the Auspices of the Council of Social Agencies. Pp. x, 571. Indianapolis: 1921.
- MAULDON, F. R. E. *The Economics of Australian Coal.* Pp. xvi, 280. Melbourne: Melbourne University Press in association with Macmillan and Company, 1929. 10s/6.
- MCCORMICK, MARY JOSEPHINE. *A Scale for Measuring Social Adequacy.* Pp. 73. Washington: National Catholic School of Social Service, 1930.
- MORRIS, WILLIAM ALFRED. *The Constitutional History of England to 1216.* Pp. xii, 430. New York: The Macmillan Company, 1930. \$2.75.
- Oil Conservation and Fuel Oil Supply.* Pp. xiv, 165. New York: National Industrial Conference Board, Inc., 1930. \$2.50.
- ORCHARD, JOHN E. *Japan's Economic Position.* Pp. xvi, 504. New York: McGraw-Hill Book Company, 1930. \$5.00.
- PASVOLSKY, LEO. *Bulgaria's Economic Position.* Pp. xiii, 409. Washington: The Brookings Institution, 1930. \$3.00.
- PHILBY, H. ST. J. B. *Arabia.* Pp. xix, 387. New York: Charles Scribner's Sons, 1930. \$5.00.
- PHILLIPS, P. D., and WOOD, G. L. (Eds.). *The Peopling of Australia.* Pp. xi, 302. Melbourne: Macmillan and Company in association with Melbourne University Press, 1930. 6s.
- Revue Economique Internationale.* Pp. 208. Brussels, Belgium: Goemaere, Imprimeur du Roi, 1930. 5 Sh.
- RICHMOND, MARY E. *The Long View.* Pp. 648. New York: Russell Sage Foundation, 1930. \$3.00.
- ROBINSON, VIRGINIA P. *A Changing Psychology in Social Case Work.* Pp. xvii, 204. Chapel Hill: University of North Carolina Press, 1930. \$2.50.
- ROBINSON, WILLIAM A. *Thomas B. Reed, Parliamentarian.* Pp. xii, 423. New York: Dodd, Mead and Company, 1930. \$5.00.
- The Rockefeller Foundation—Annual Report, 1929.* Pp. 402. New York: The Rockefeller Foundation, 1930.
- SCHAFER, JOSEPH (Ed.). *Carl Schurz—Militant Liberal.* Pp. xxi, 270. Evansville: State Historical Society of Wisconsin, 1930.

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